

FIG. 1A

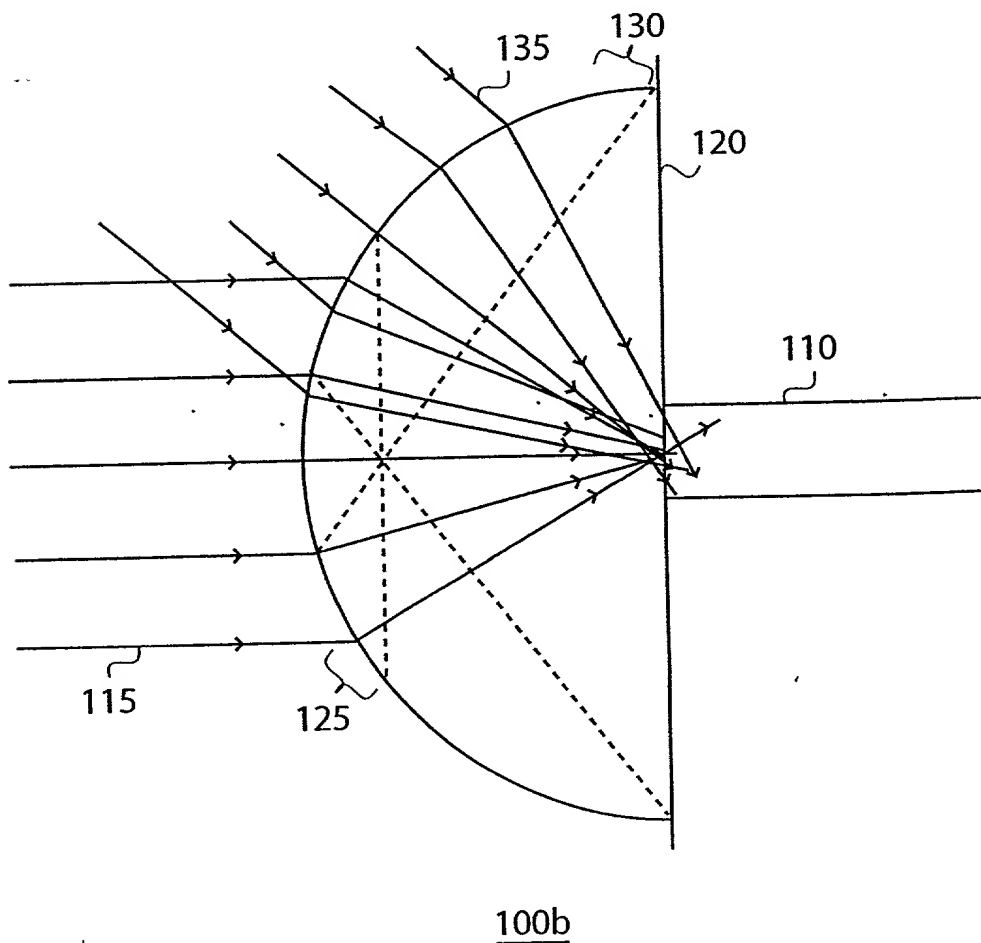


FIG. 1B

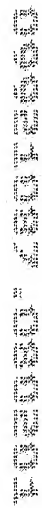
[illegible]

FIG. 2A

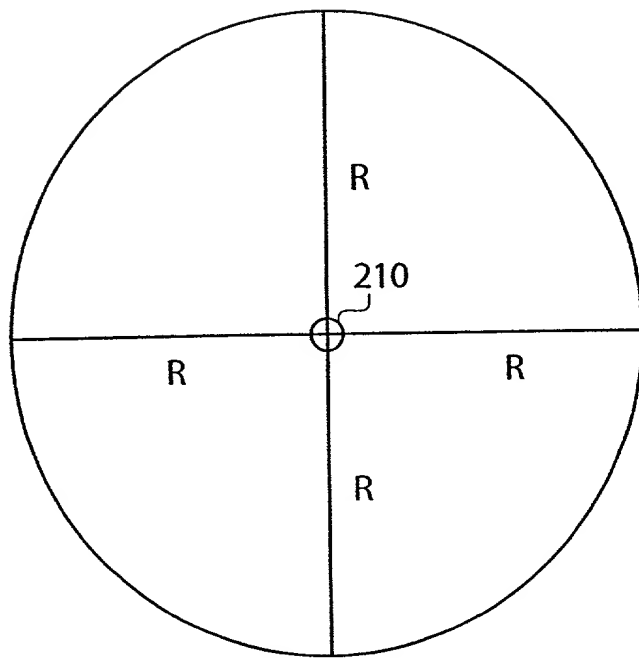


FIG. 2B

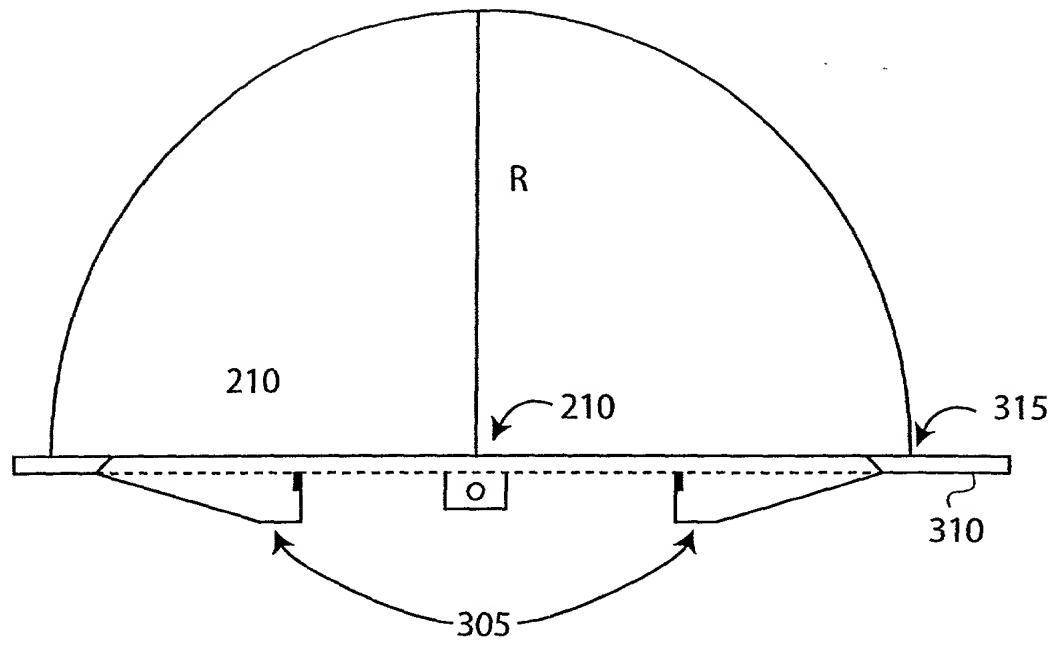


FIG. 3A

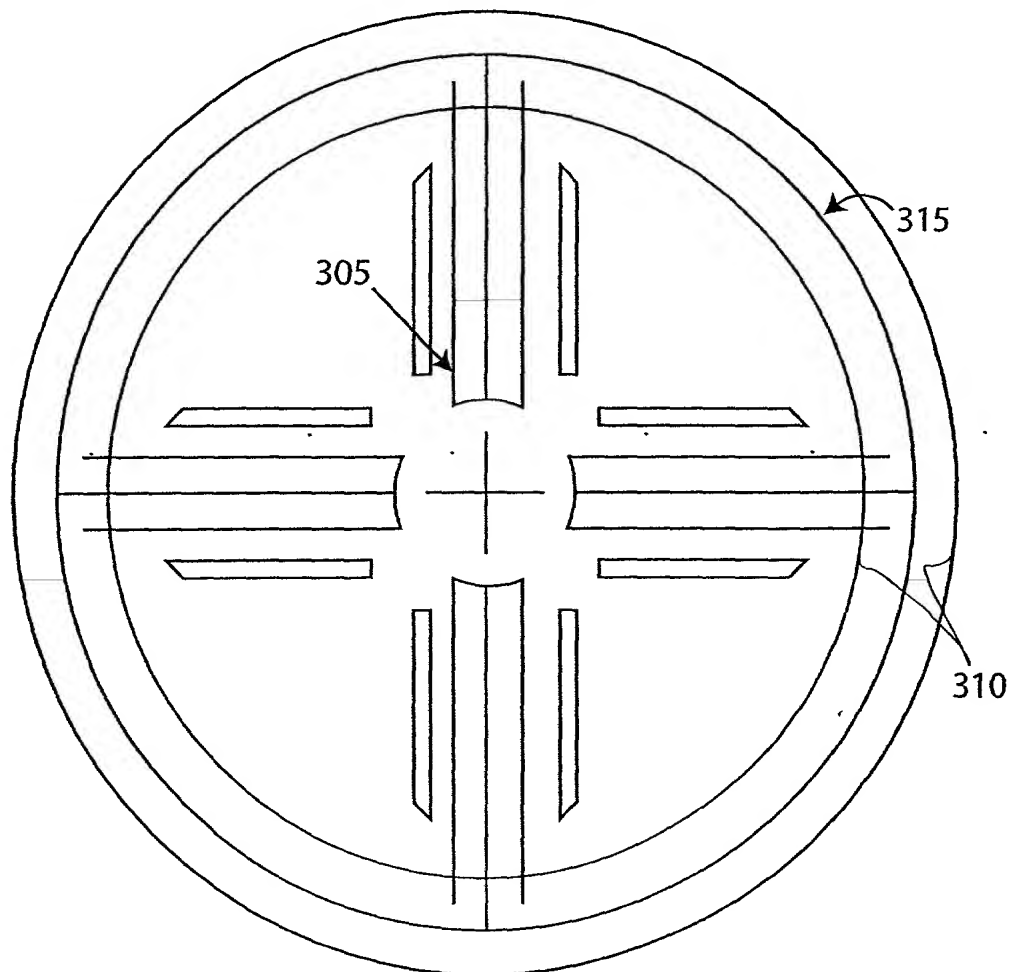


FIG. 3B

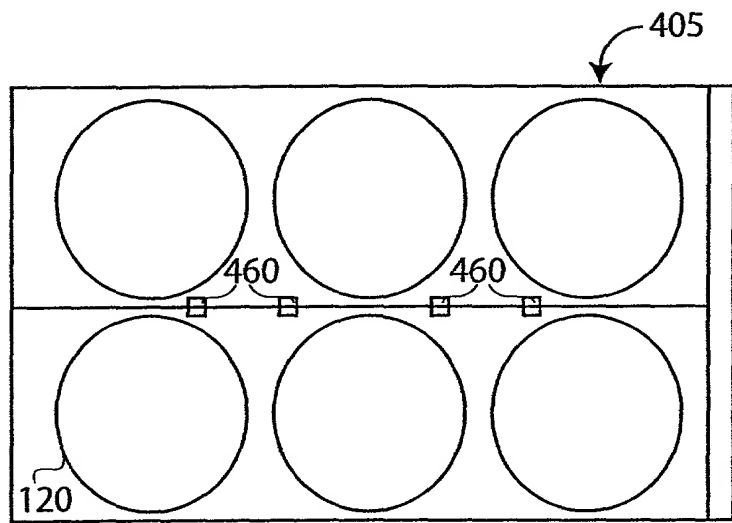


FIG. 4A

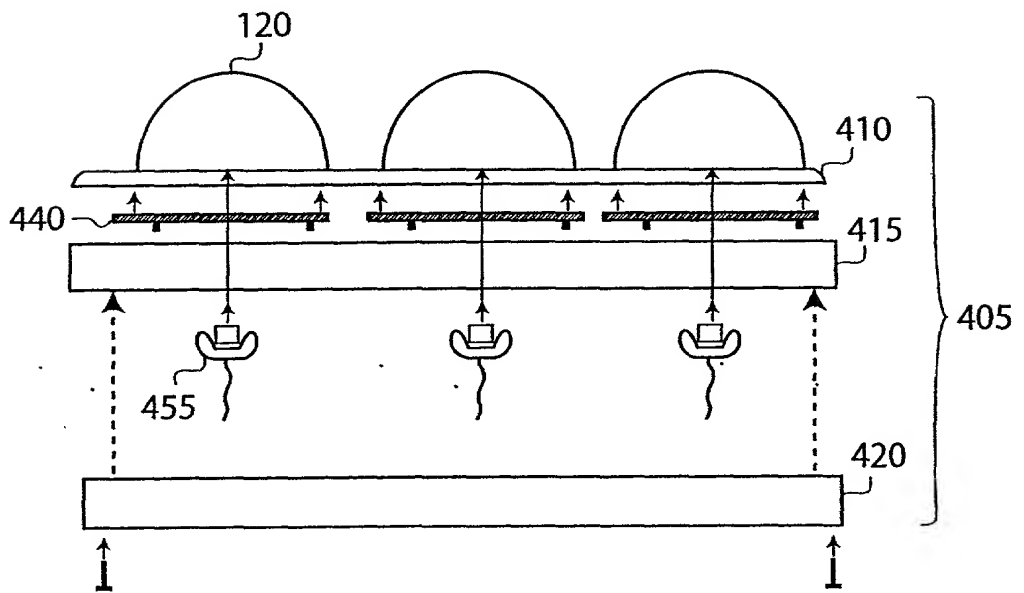


FIG. 4B

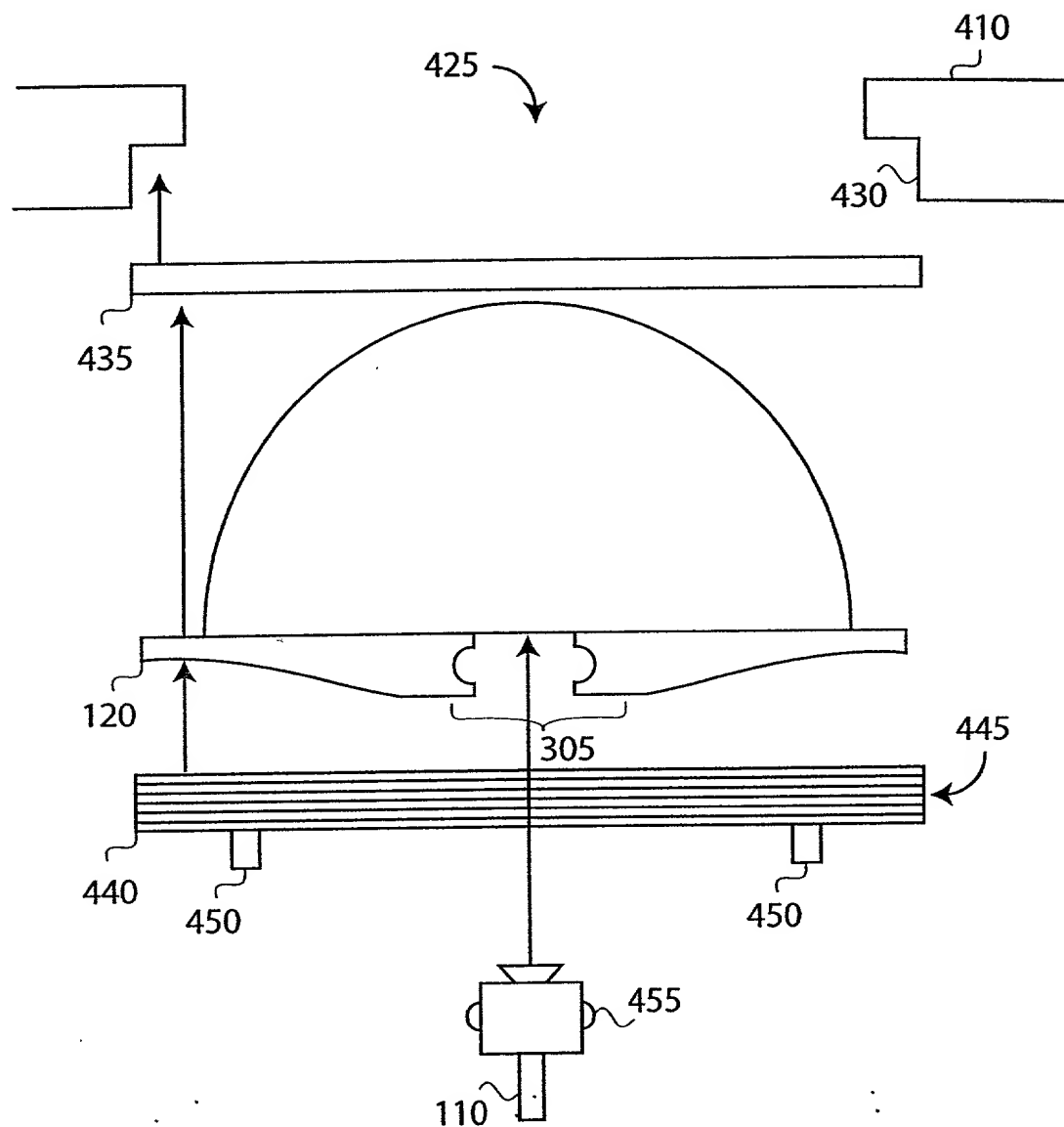


FIG. 4C

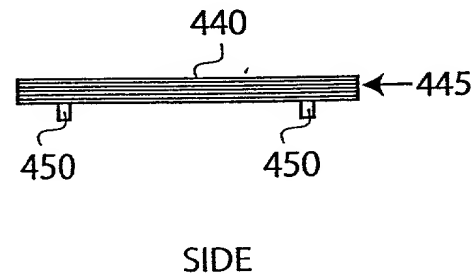
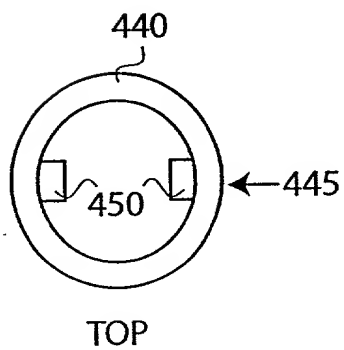


FIG. 4D

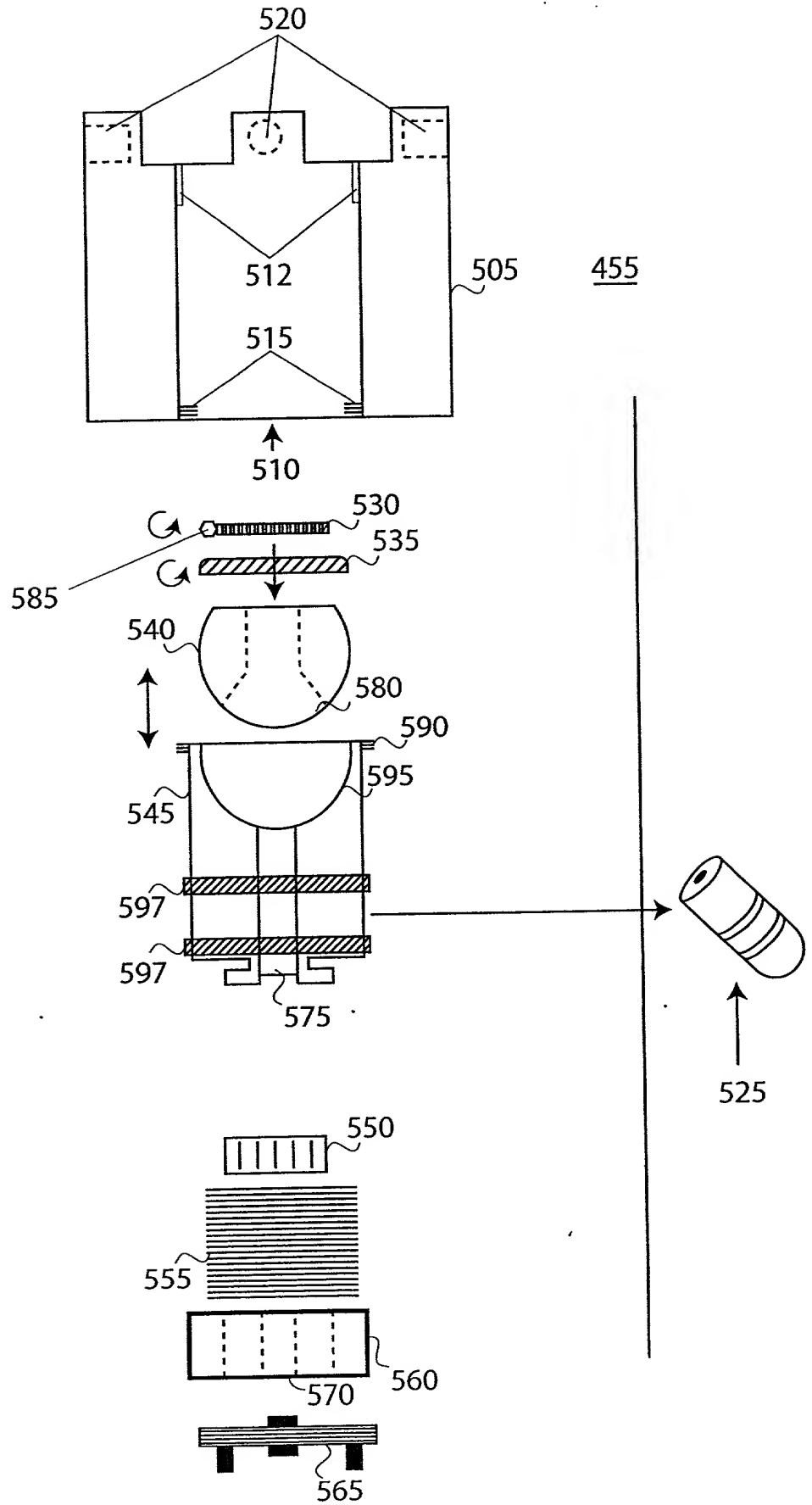


FIG. 5

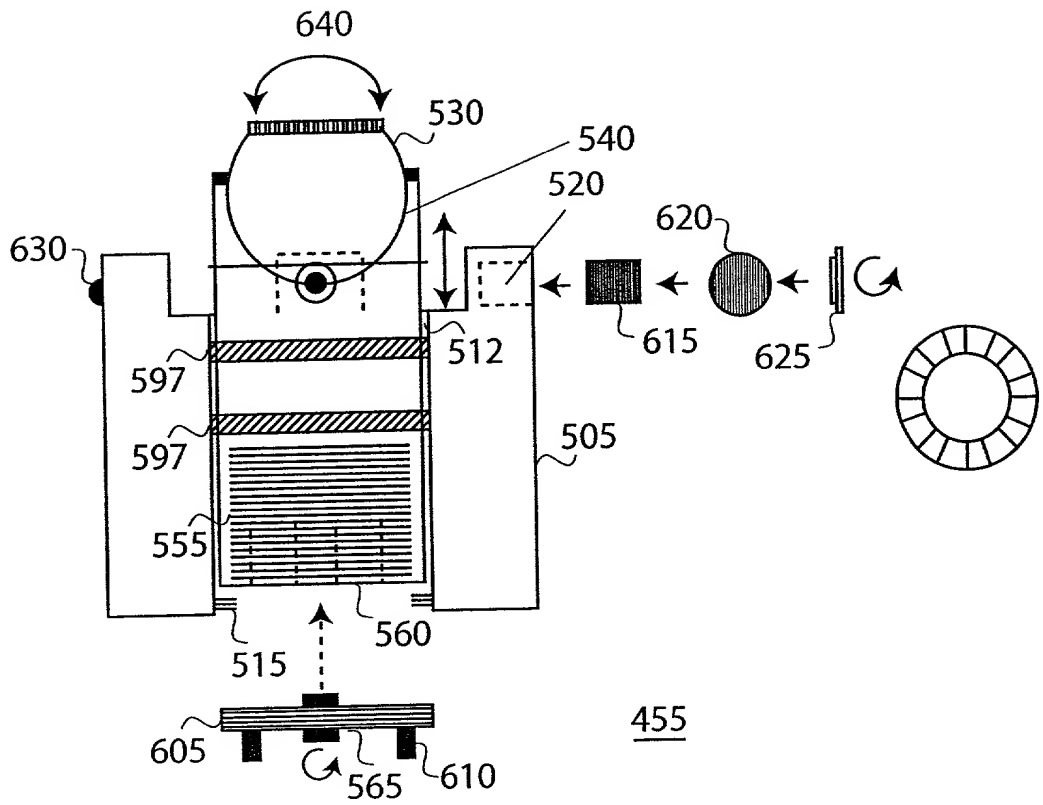


FIG. 6A

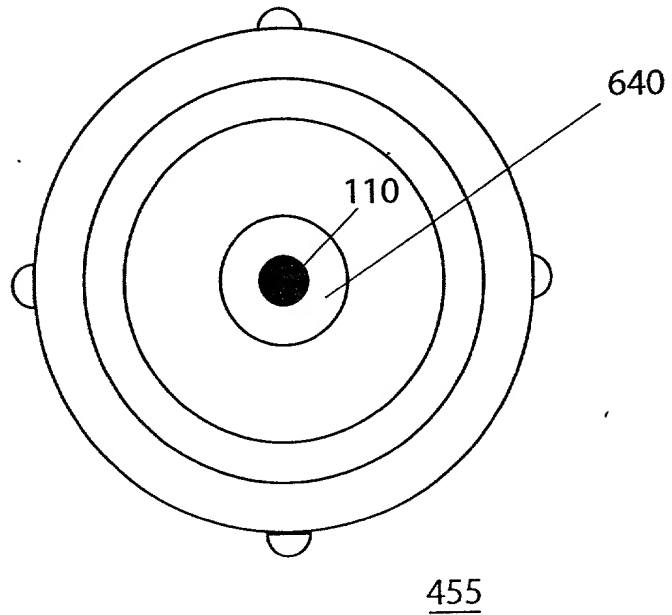


FIG. 6B

MIDDLE SECTION

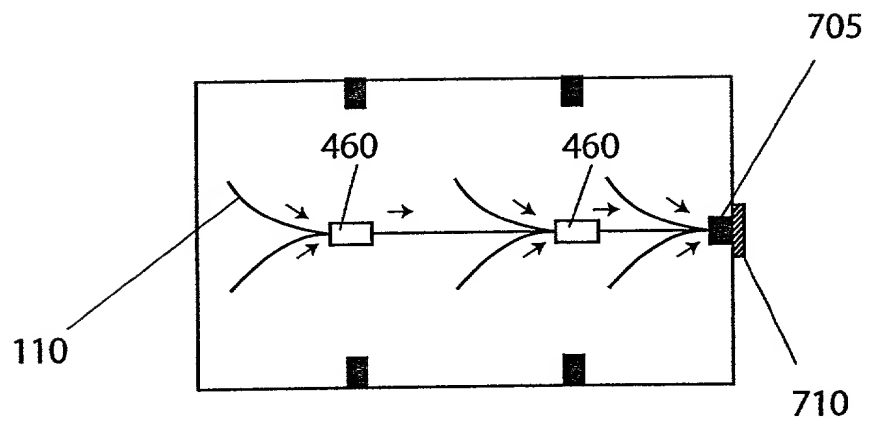


FIG. 7A

BOTTOM PANEL

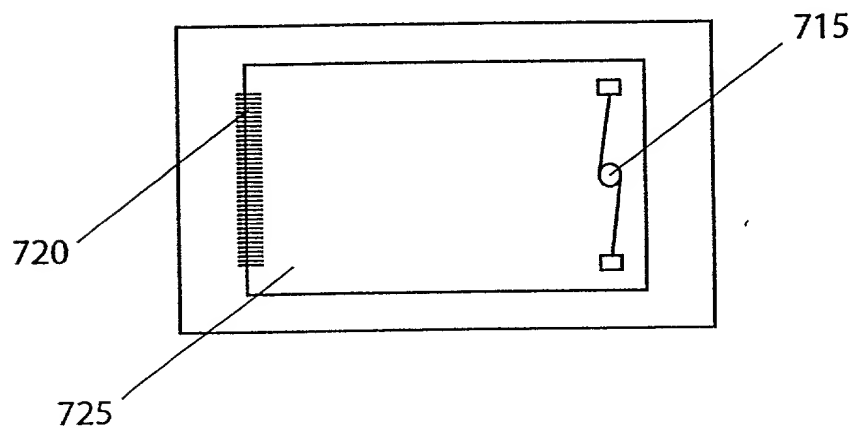


FIG. 7B

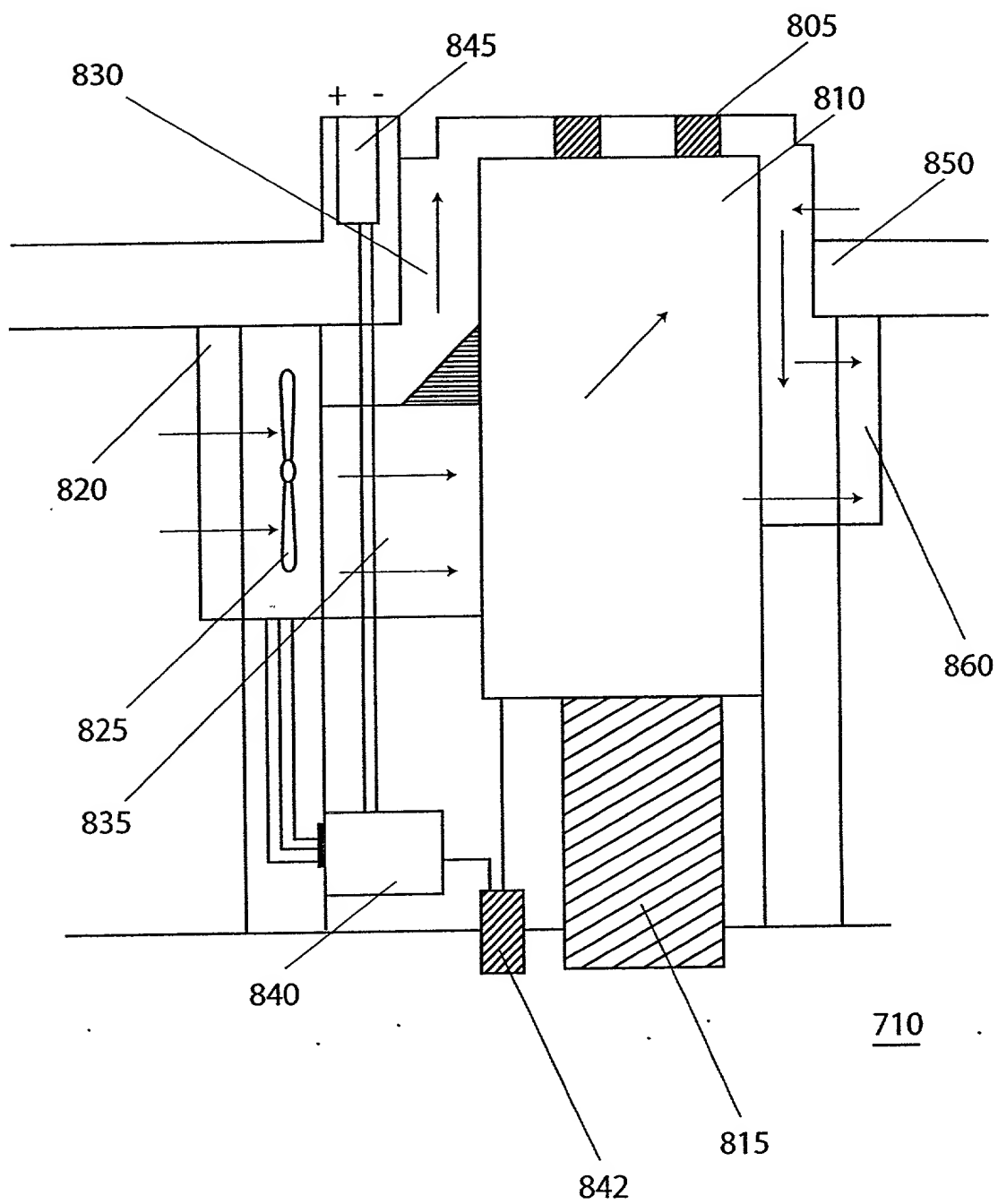


FIG. 8

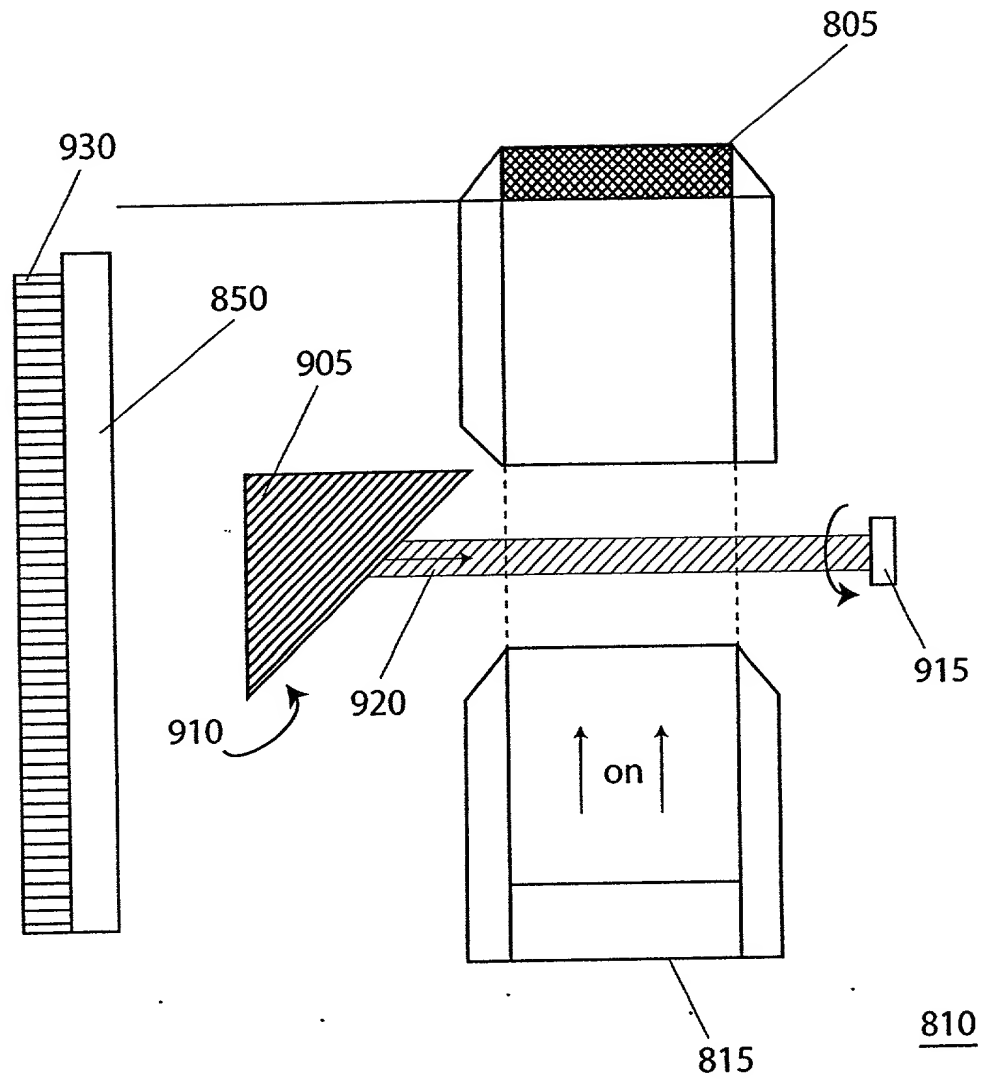


FIG. 9

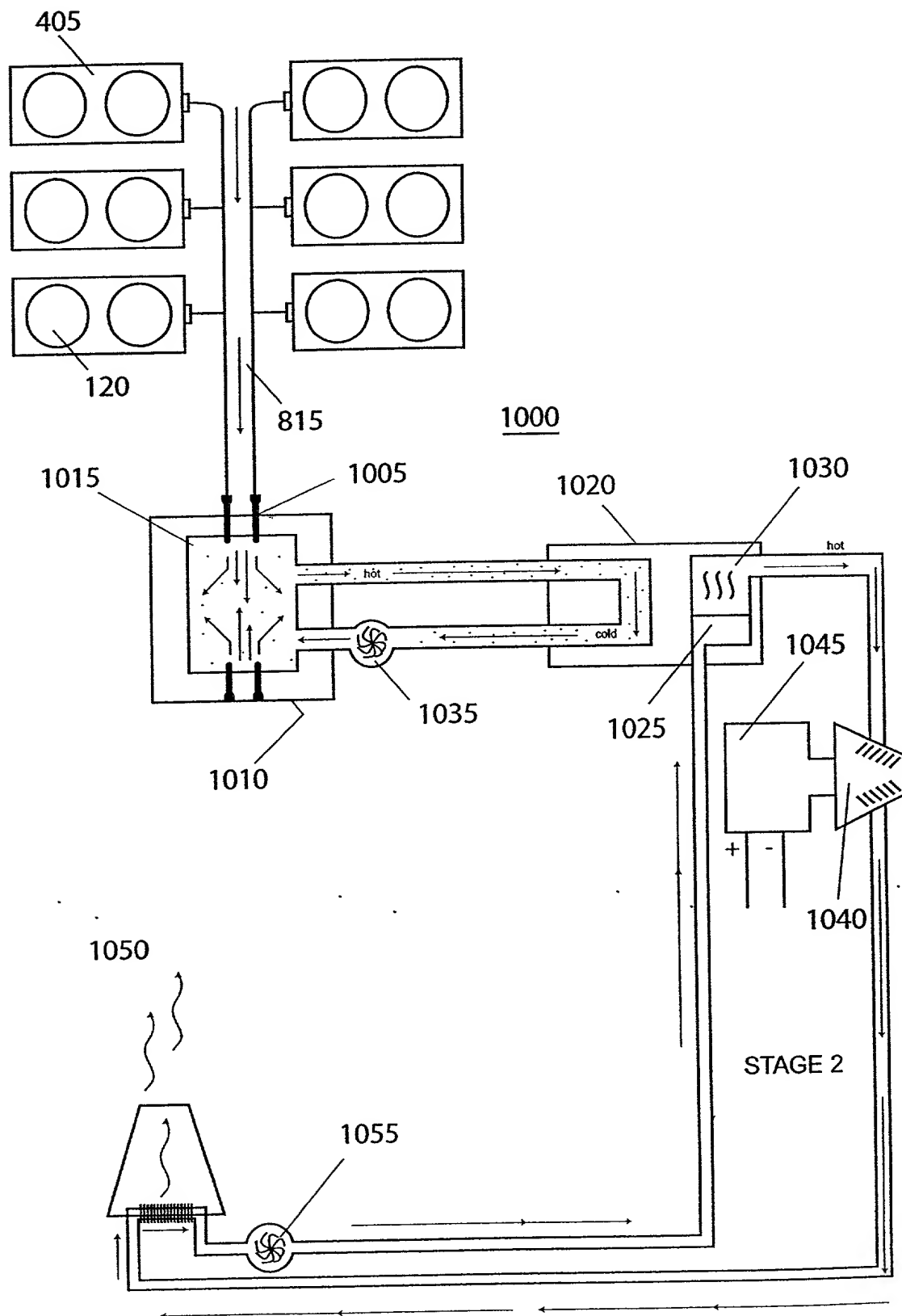


FIG. 10

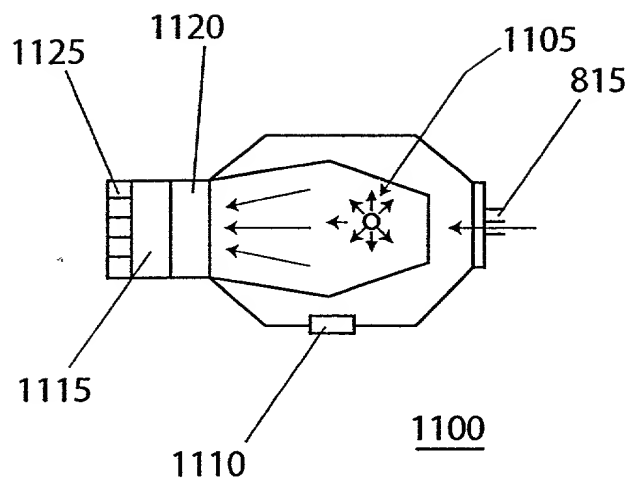


FIG. 11

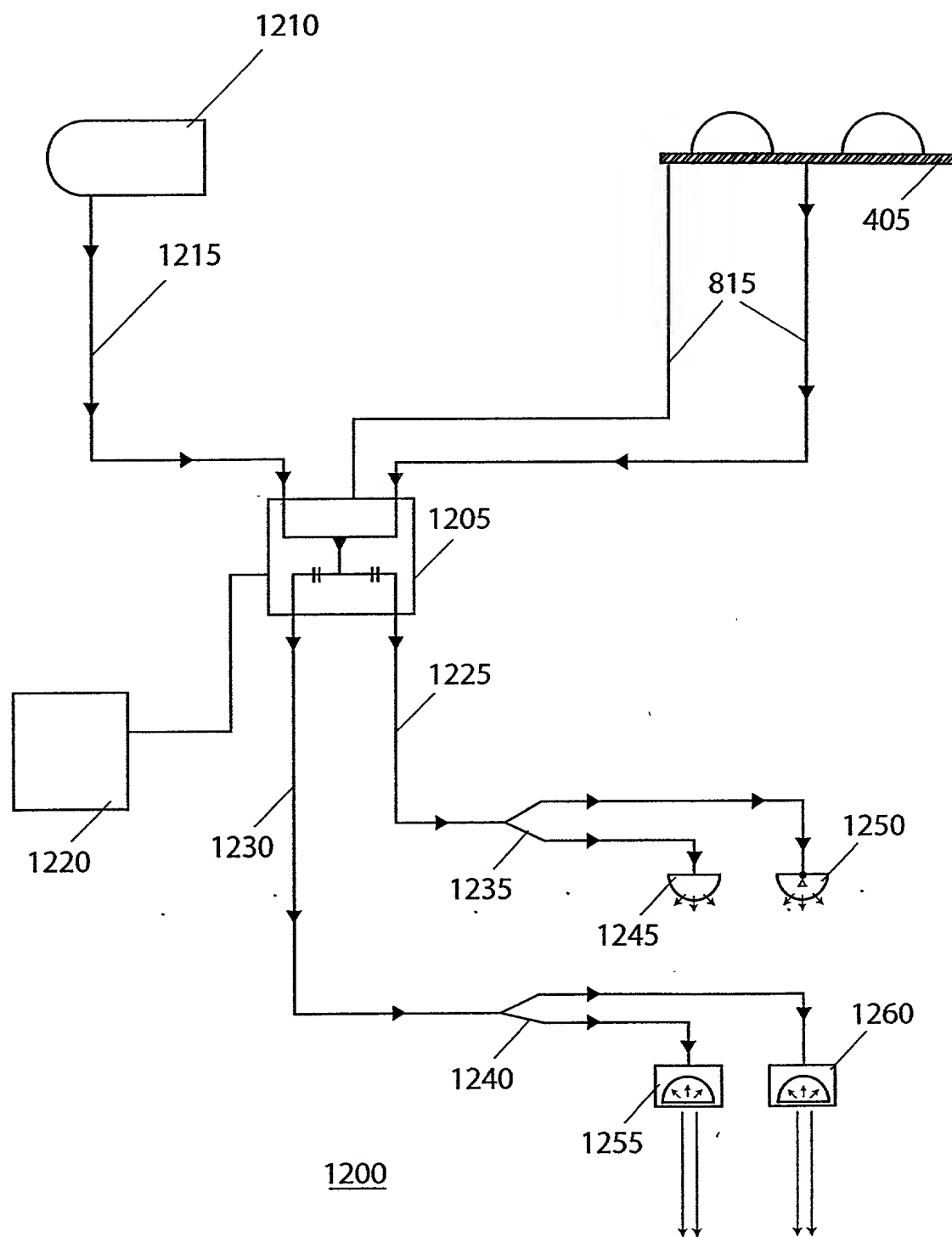


FIG. 12

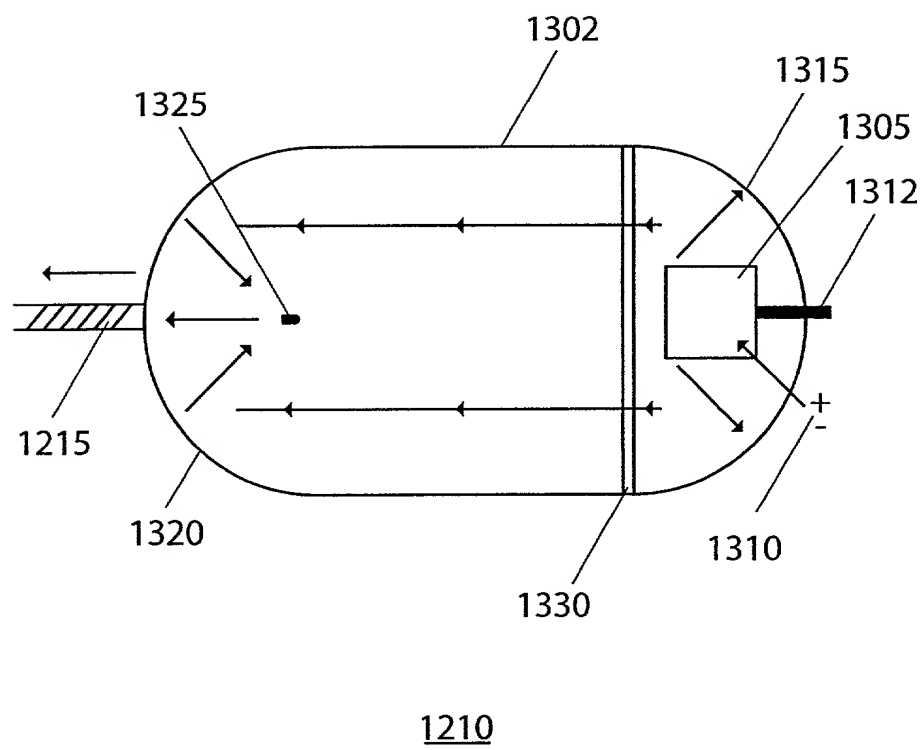


FIG. 13

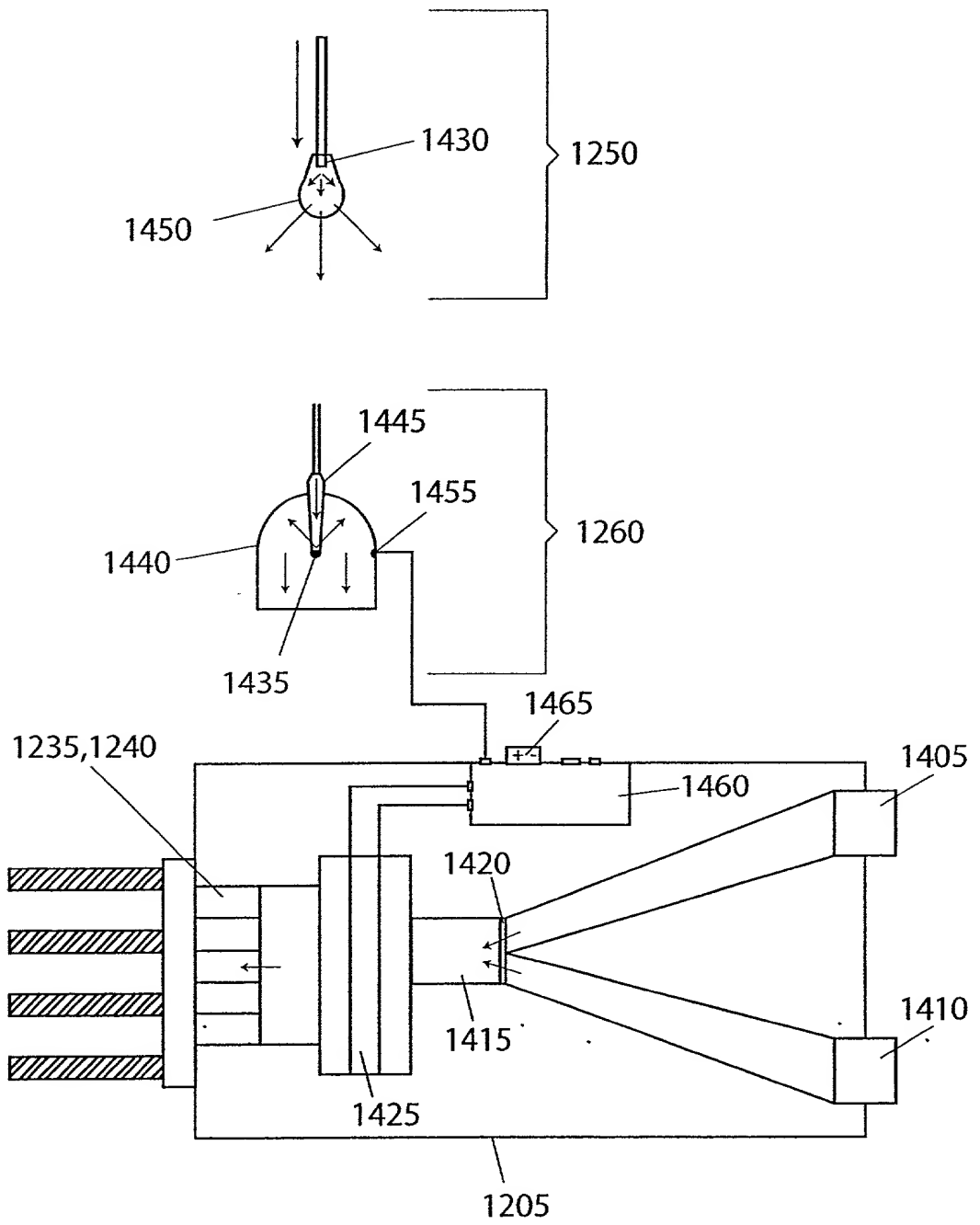


FIG. 14

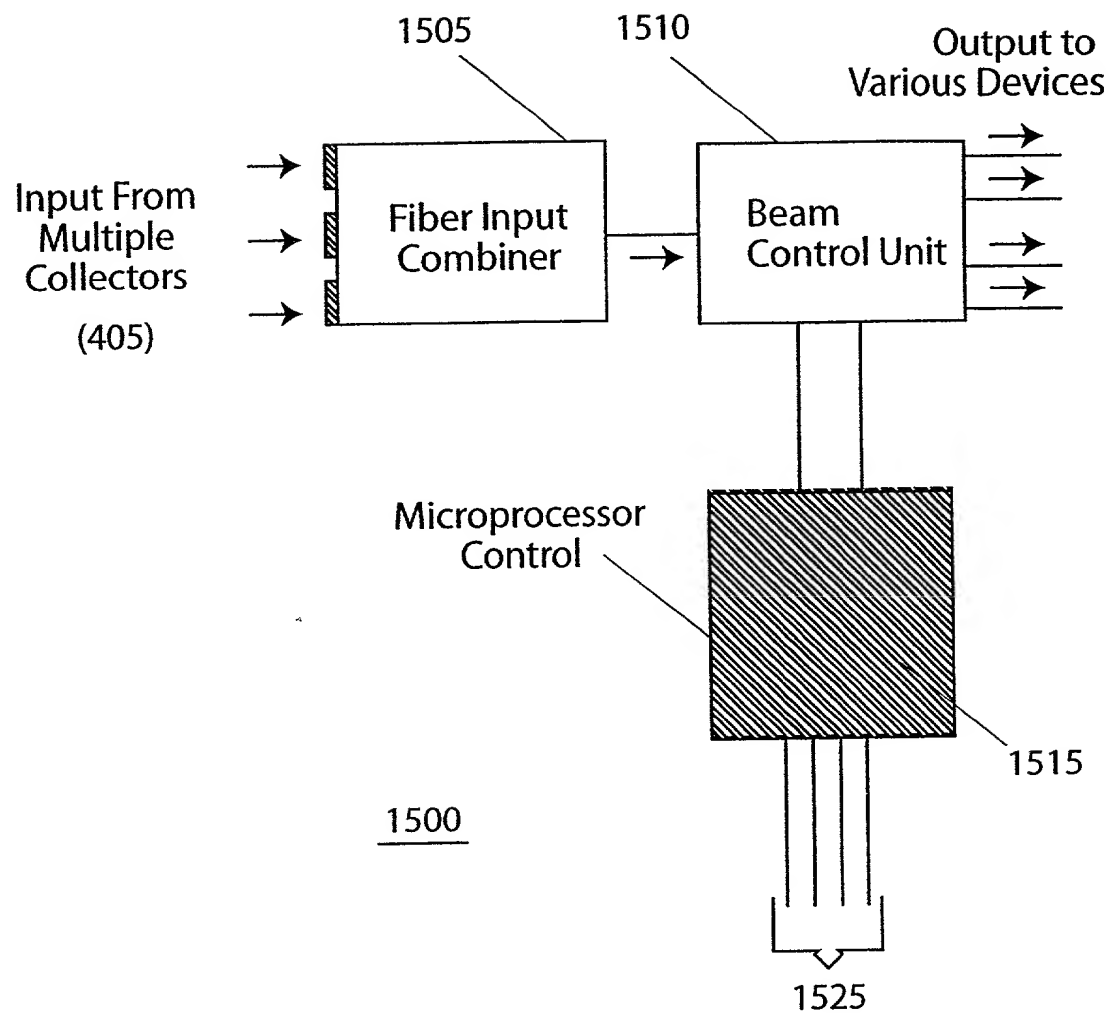


FIG. 15A

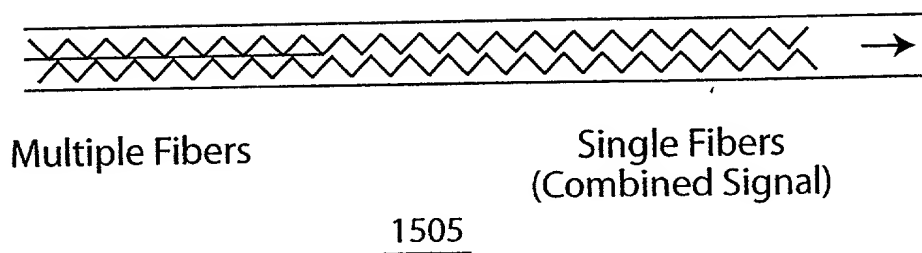


FIG. 15B

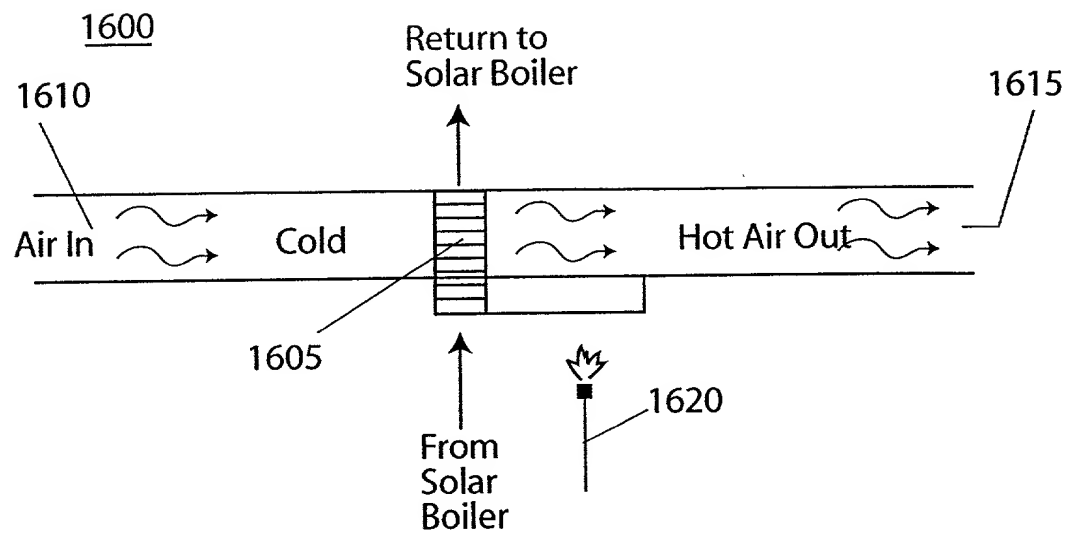


FIG. 16

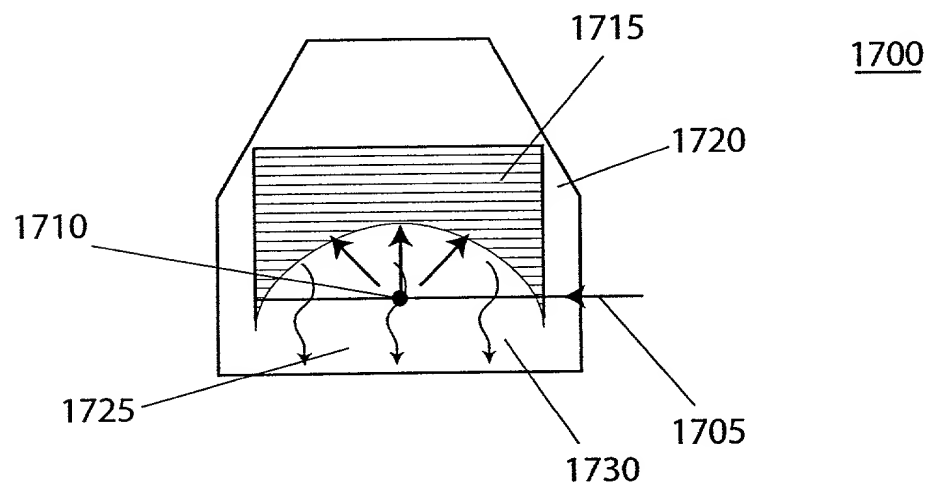


FIG. 17

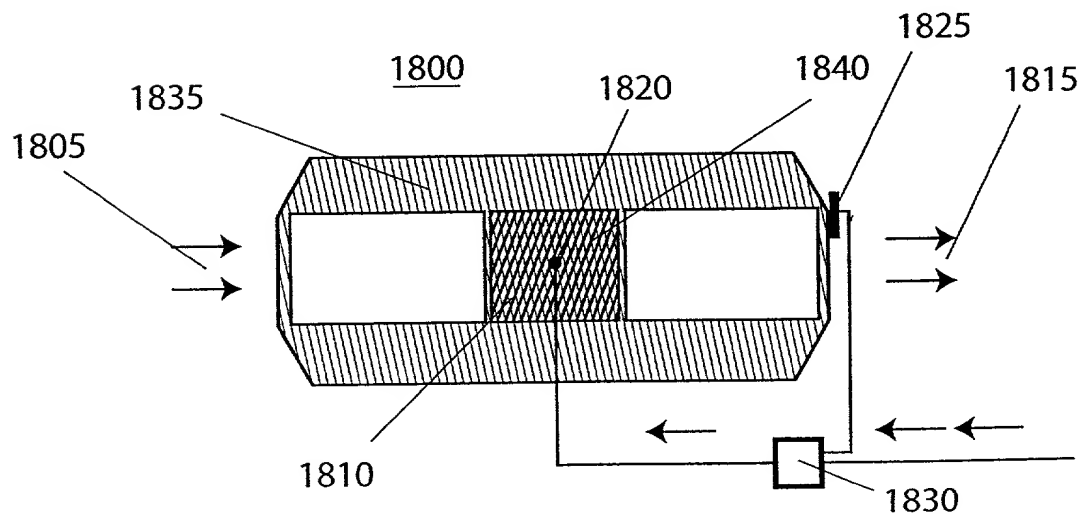


FIG. 18

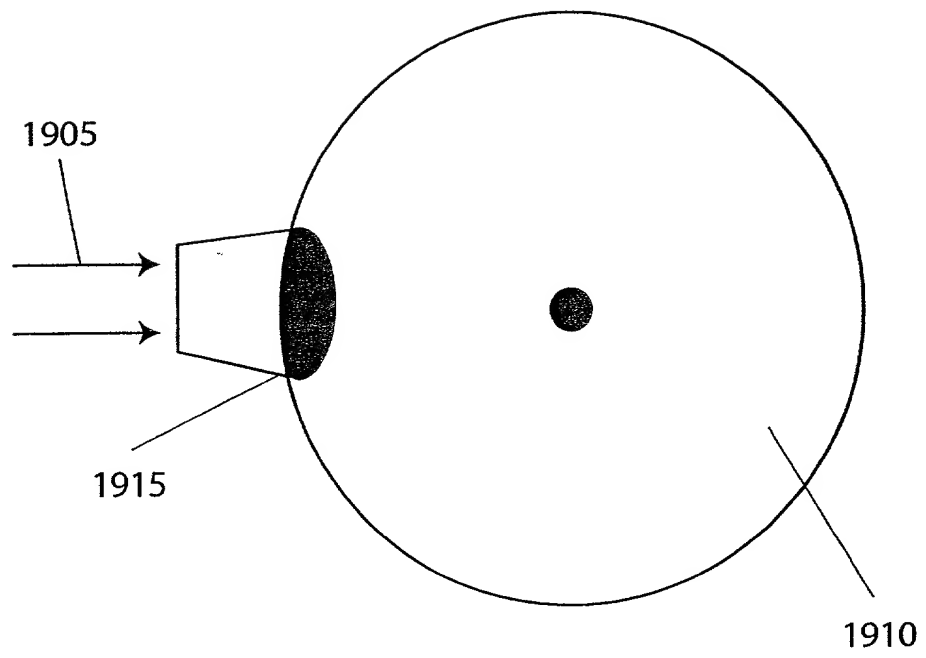


FIG. 19

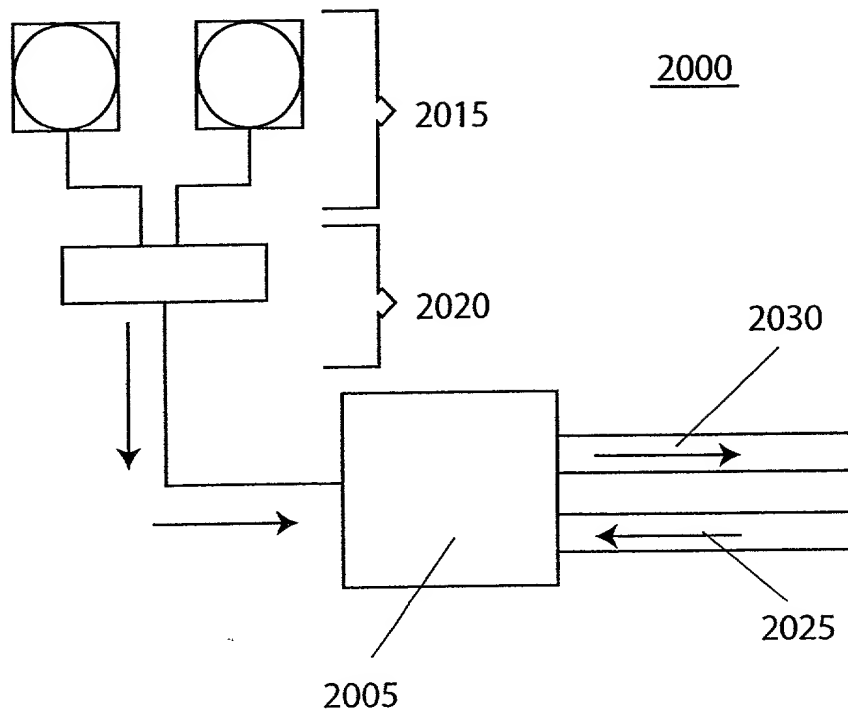


FIG. 20A

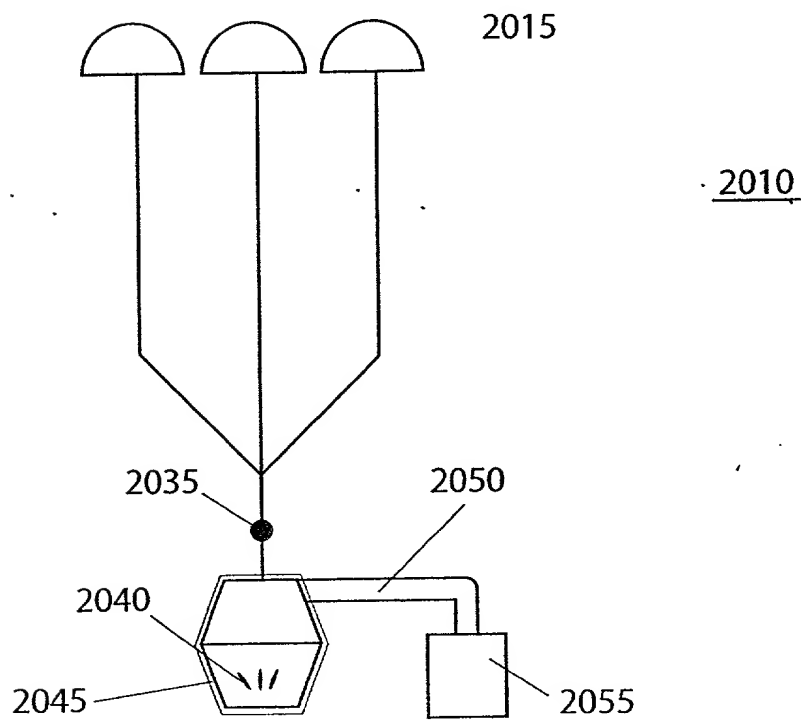


FIG. 20B

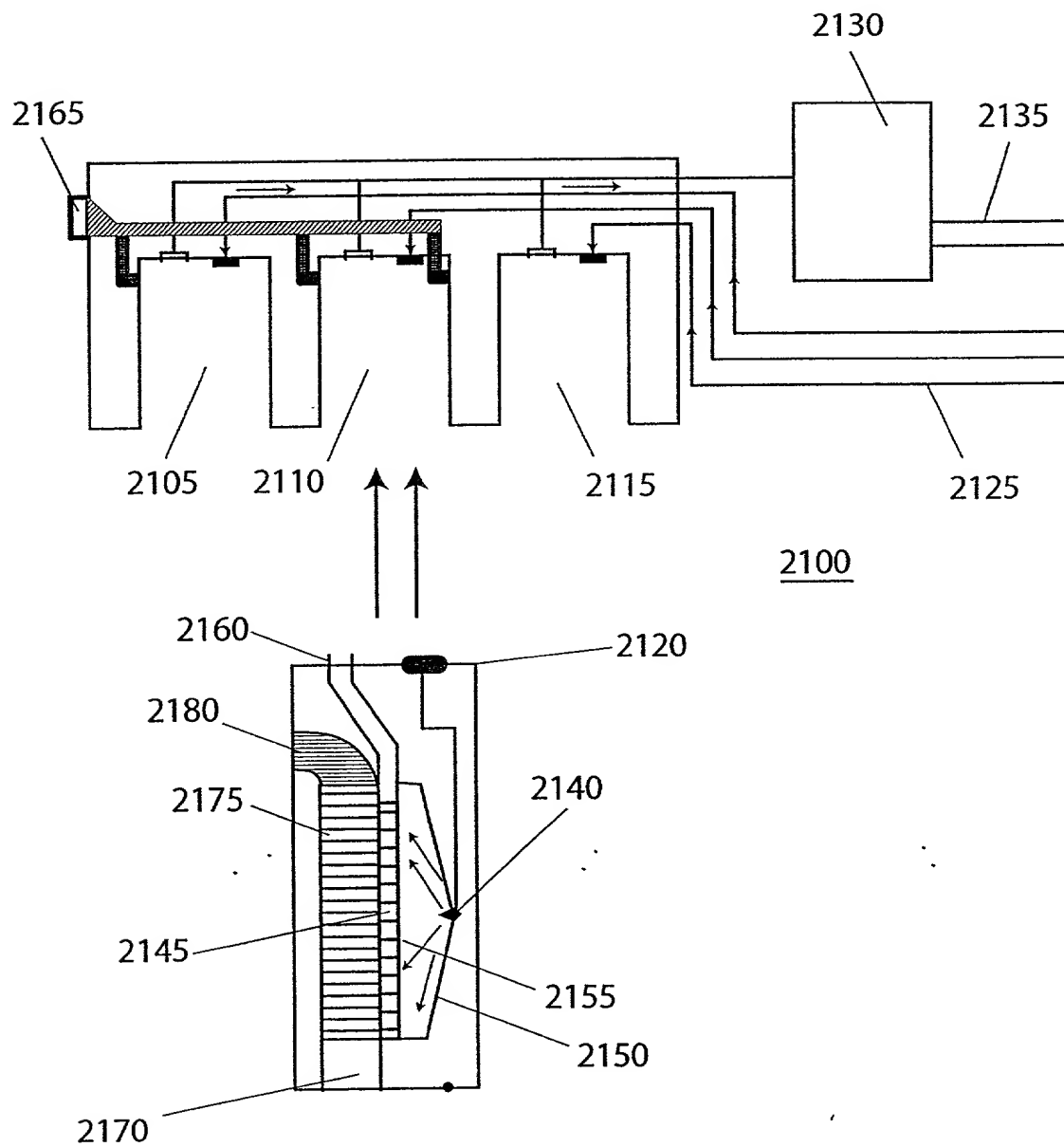


FIG. 21

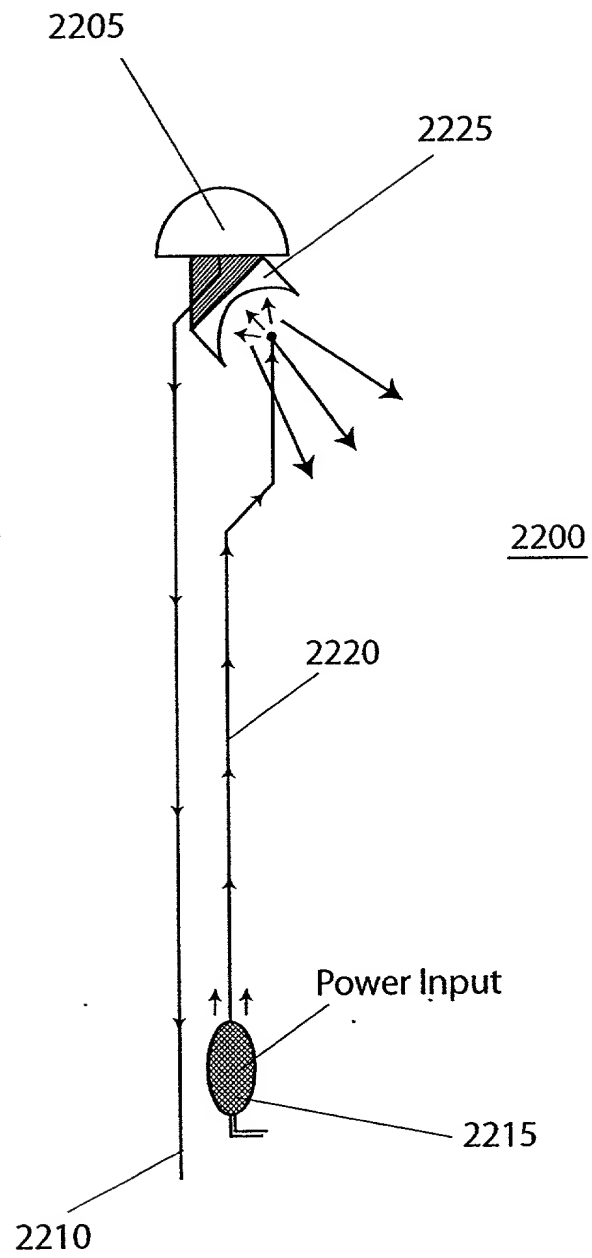


FIG. 22

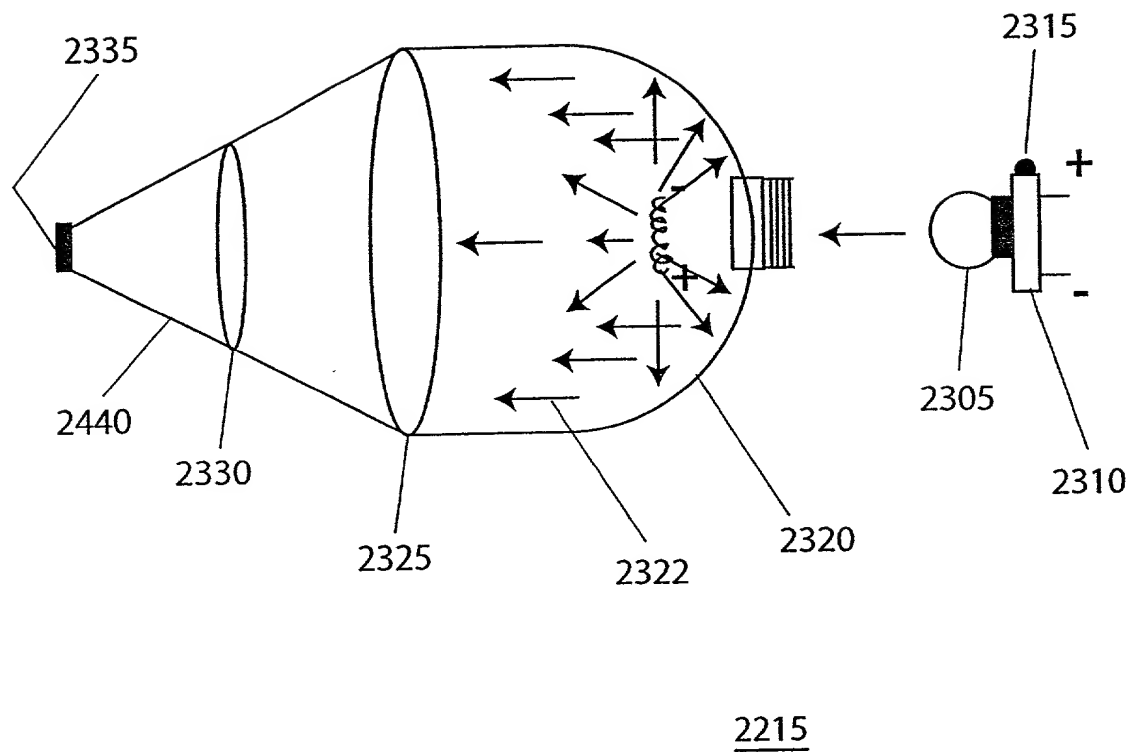


FIG. 23

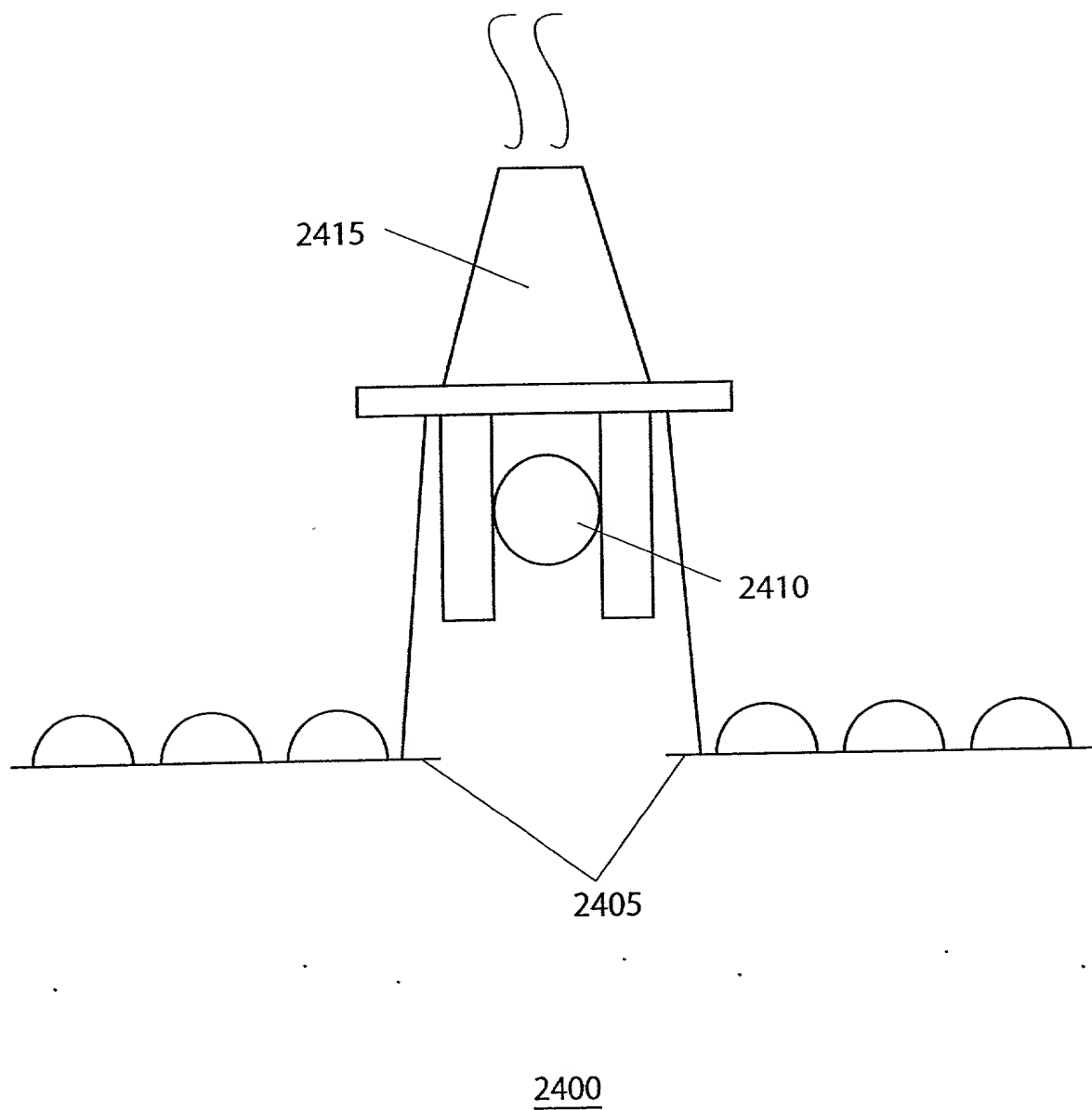


FIG. 24

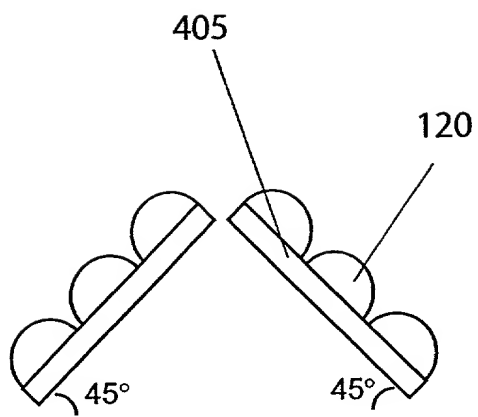


FIG. 25

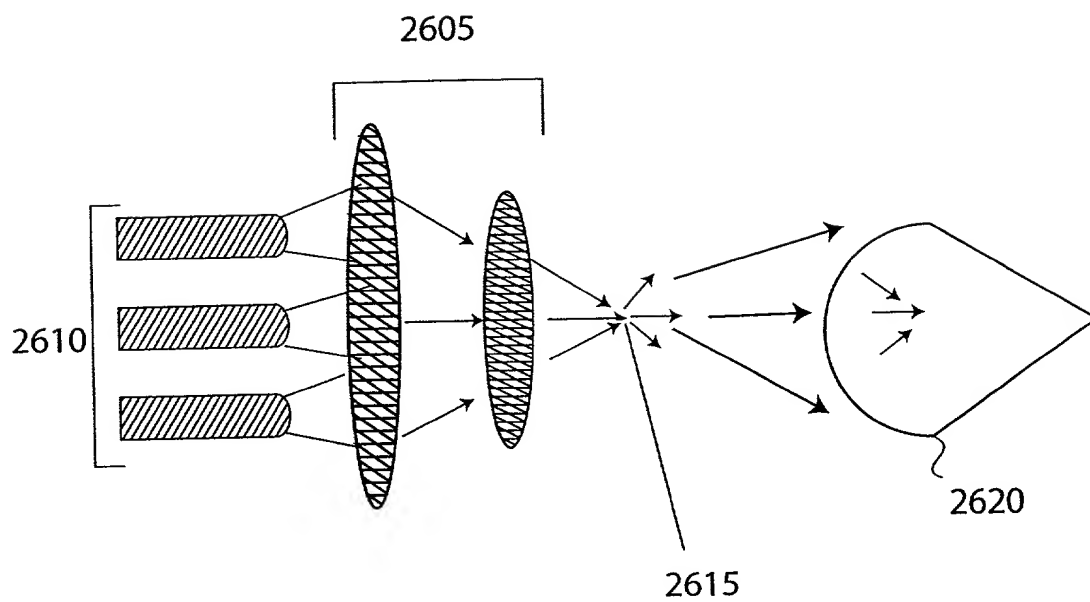


FIG. 26

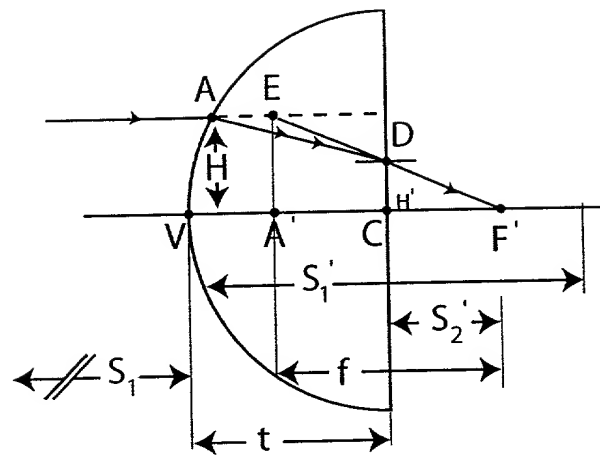


FIG. 27

$n_1 = 1.5$
 $n_2 = 1.5$
 $R = 1$
 $B = 0$

Note:
 Radius of surface one = thickness of lens
 Radius of surface two = infinity

Angles of Incidence and Refraction with Light Source at Infinity

1	2	3	4
Angle of incidence	Angle of refraction	Angle of incidence	Angle of refraction
0	0	0	0
1	0.70947641	0.29092359	0.40618171
2	1.41870911	0.38129209	0.81939699
3	2.12793324	0.67220676	1.22950176
4	2.83656162	1.16344383	1.64009148
5	3.54468836	1.45511163	2.05133014
6	4.25268139	1.74731862	2.46338205
7	4.95982516	2.04017839	2.87641155
8	5.66621284	2.33378715	3.29084924
9	6.37172083	2.62826911	3.70609743
10	7.07608382	2.92371418	4.12308526
11	7.77971348	3.22038632	4.54162635
12	8.48195171	3.51864824	4.96095152
13	9.18288247	3.81713173	5.38453846
14	9.88234051	4.11653439	5.80916079
15	10.58026861	4.41673136	6.23614323
16	11.27651469	4.71734831	6.66566992
17	11.97064327	5.01920378	7.09728376
18	12.66349092	5.32269079	7.53109649
19	13.35397213	5.62670786	7.97140896
20	14.04272922	5.93270782	8.4102046
21	14.73028216	6.23717184	8.85160867
22	15.41184847	6.53815127	9.30023725
23	16.09280009	6.83571568	9.75983422
24	16.7711282	7.12987199	10.21679955
25	17.44650311	7.42134085	10.67815138
26	18.11900413	7.70995877	11.14411817
27	18.78830438	8.21169521	11.61493818
28	19.4543137	8.545883	12.09080999
29	20.11887848	8.88312152	12.57210891
30	20.7738415	9.22413849	13.05897137
31	21.42104183	9.56859815	13.55170338
32	22.06231465	9.91768348	14.05057932
33	22.7249111	10.27030889	14.55586243
34	23.37239818	10.62760182	15.06790332
35	24.01083834	10.98914146	15.58695913
36	24.6469043	11.35530957	16.11333662
37	25.27370747	11.72629253	16.64736971
38	25.89771861	12.10228139	17.18940308

Corresponding Geometric/Trigonometric Spherical Collector Variables

H	X	Y	h	Z
Incident ray height	Ray transmission dist	Y - H - h	Incident ray height	Focal Length
Surface 01			Surface 02	
0	0	0	0	0
1	0.10471439	0.00428802	0.14853921	10.30094351
2	0.2093698	0.00683771	0.227796596	10.30177985
3	0.31401573	0.012155476	0.296983367	10.30192845
4	0.418538842	0.0151831731	0.371102726	10.30212321
5	0.523934456	0.020328265	0.445137945	10.302465117
6	0.62717078	0.021143684	0.519072377	10.302871787
7	0.73121606	0.24214913	0.592889776	10.3033594
8	0.835038936	0.27203979	0.666572812	10.30392637
9	0.938676101	0.301782777	0.740160889	10.30457281
10	1.042147015	0.331380869	0.813477164	10.30529963
11	1.145483972	0.360812083	0.886633802	10.30610753
12	1.247470145	0.390061328	0.959644998	10.30699745
13	1.349706326	0.419112982	1.032418392	10.30798314
14	1.451531374	0.44795138	1.104962891	10.30906931
15	1.552914271	0.476560748	1.177263386	10.3102597781
16	1.653824135	0.504925192	1.249305036	10.31155913
17	1.754202028	0.532028892	1.321073285	10.312977781
18	1.854101966	0.558855045	1.392553882	10.314546351
19	1.953408077	0.585387951	1.463732609	10.31627743
20	2.052107697	0.611610898	1.5345968	10.31807646
21	2.150207697	0.637511454	1.605132362	10.319942831
22	2.24763956	0.663099566	1.675328805	10.321878341
23	2.344386771	0.688320912	1.745167764	10.323883621
24	2.440419838	0.713272746	1.814648324	10.32595931
25	2.535707957	0.737846722	1.883742053	10.32810531
26	2.630228881	0.762094945	1.952453024	10.330332148
27	2.723942598	0.786039145	2.020765849	10.332649581
28	2.816820377	0.809693227	2.08867071	10.335058523
29	2.908837721	0.83318243	2.156158888	10.337569729
30	3.000228449	0.85651612	2.223223005	10.340193259
31	3.091003804	0.87966145	2.289848351	10.342930257
32	3.179515385	0.902637035	2.356035927	10.3457818123
33	3.26783421	0.925432408	2.421775987	10.3487488123
34	3.355157421	0.948034556	2.487063072	10.351831925
35	3.441458618	0.970481912	2.551892362	10.355034982
36	3.526711514	0.99181306	2.616239917	10.358369937
37	3.610860139	1.013046121	2.680162751	10.361840937
38	3.69398832	1.034180422		

39	26.51652792	12.48547208	17.79977853	3.77922346	4.65287369	1.03232368	2.74398778	3.77922346	3.77922346
40	27.17599451	12.80626549	18.29885594	3.85672658	4.59626659	1.05138585	2.80656773	3.85672658	3.85672658
41	27.7773244	13.2026756	19.88700997	3.937634174	4.528237481	1.05728645	2.869607724	3.937634174	3.937634174
42	28.339771056	13.66028944	19.44462887	4.014788993	4.458868933	1.063481639	2.91101999	4.014788993	4.014788993
43	28.93653242	14.05434258	20.03211606	4.09190016	4.38812221	1.069817773	2.962673387	4.09190016	4.09190016
44	29.52533624	14.47468376	20.6289818	4.167950223	4.31033802	1.114167556	3.035782667	4.167950223	4.167950223
45	30.18534577	14.891140353	21.23839217	4.242604087	4.242604087	1.126202702	3.114457985	4.242604087	4.242604087
46	30.68501453	15.314198475	21.85807206	4.316038802	4.167950223	1.149319575	3.176464927	4.316038802	4.316038802
47	31.254563938	15.74546062	22.48940525	4.38812221	4.09190016	1.175170606	3.234411604	4.38812221	4.38812221
48	31.81368532	16.18013571	23.18138583	4.458868933	4.014788993	1.165121213	3.293747774	4.458868933	4.458868933
49	32.37173752	16.62802648	23.78902946	4.528237481	3.936354174	1.175927616	3.352666765	4.528237481	4.528237481
50	32.91807705	17.08109297	24.43837482	4.59626659	3.85672658	1.185090747	3.411175912	4.59626659	4.59626659
51	33.43811127	17.54118873	25.14148516	4.66375769	3.77922346	1.193579442	3.469265326	4.66375769	4.66375769
52	33.98908421	18.01091579	25.83804998	4.728064522	3.693508001	1.201021345	3.527043176	4.728064522	4.728064522
53	34.51155446	18.48844554	26.55138606	4.79181306	3.610880139	1.207377887	3.584433774	4.79181306	4.79181306
54	35.0252654	18.9745756	27.27044609	4.854101966	3.526711514	1.212606265	3.641495703	4.854101966	4.854101966
55	35.5298753	19.47012427	28.0238082	4.914912266	3.441438678	1.216695308	3.682246957	4.914912266	4.914912266
56	36.02315758	19.97482146	28.78317664	4.974223435	3.355157421	1.219509448	3.734716088	4.974223435	4.974223435
57	36.51080101	20.48195899	29.56432228	5.032023408	3.26783421	1.221051651	3.810932356	5.032023408	5.032023408
58	36.98650099	21.01245091	30.36204095	5.088288577	3.179515585	1.221560685	3.866922958	5.088288577	5.088288577
59	37.45196491	21.54801509	31.17915682	5.140038084	3.090228449	1.22036583	3.922737951	5.140038084	5.140038084
60	37.90622447	22.0907753	32.01657818	5.196152423	3	1.217731475	3.978400948	5.196152423	5.196152423
61	38.35101617	22.64898383	32.87524766	5.247718243	2.908837721	1.213719416	4.033598827	5.247718243	5.247718243
62	38.78959571	23.21604329	33.75617231	5.297083557	2.818629377	1.20622883	4.086457207	5.297083557	5.297083557
63	39.20543259	23.76459741	34.66204166	5.346039145	2.723942598	1.20109307	4.148946338	5.346039145	5.346039145
64	39.61513065	24.28486935	35.58917644	5.392764278	2.630226881	1.192286413	4.200477865	5.392764278	5.392764278
65	40.01273763	24.88728377	36.54162741	5.437846722	2.535703037	1.181734611	4.261112811	5.437846722	5.437846722
66	40.39793637	25.26026563	37.52318246	5.481727746	2.440149638	1.169961359	4.311911387	5.481727746	5.481727746
67	40.77041554	25.62398446	38.53523143	5.529429157	2.344386771	1.155085297	4.367943824	5.529429157	5.529429157
68	41.12986144	25.987013854	39.57372791	5.563103127	2.247639546	1.138620089	4.424232036	5.563103127	5.563103127
69	41.47596548	26.34073348	40.64733468	5.601482559	2.15027697	1.120474029	4.481006396	5.601482559	5.601482559
70	41.80841397	26.59136503	41.7301862	5.638157525	2.05212086	1.099849583	4.53826542	5.638157525	5.638157525
71	42.12692931	26.87309069	42.8943516	5.673111454	1.953408927	1.077142667	4.595968487	5.673111454	5.673111454
72	42.43115985	29.5684915	44.07422388	5.706390698	1.854101966	1.051943565	4.654395553	5.706390698	5.706390698
73	42.72084602	30.279715398	45.29473747	5.737628536	1.754230228	1.034238736	4.71359515	5.737628536	5.737628536
74	42.99570934	31.00429066	46.55906746	5.767570176	1.653824135	1.009886503	4.773682313	5.767570176	5.767570176
75	43.254636	31.744563	47.87064206	5.793554958	1.552914271	0.980767733	4.834787225	5.793554958	5.793554958
76	43.50015908	49.23342443	5.821774338	5.821774338	1.451531374	0.94273337	4.897041221	5.821774338	5.821774338
77	43.7285892	43.6250155	5.846220389	5.846220389	1.247070326	0.885627771	4.960592617	5.846220389	5.846220389
78	43.94144685	34.05381871	3.868885604	3.868885604	1.347470145	0.843426337	5.025600233	4.007135154	4.007135154
79	44.13819071	35.67999506	5.937999506	5.937999506	1.144823056	0.797227009	5.092236038	3.907814523	3.907814523
80	44.31861435	35.86180329	5.988763101	5.988763101	1.114839518	0.752291663	5.167226093	5.91335315	5.91335315
81	44.48249556	36.51739444	57.01339644	57.01339644	1.041889066	0.718160693	5.251686405	3.872591115	3.872591115
82	44.63665709	37.37034791	58.82229845	58.82229845	0.93860679	0.694976854	5.32115569	3.834380968	3.834380968
83	44.75991262	38.24008738	60.71767782	60.71767782	0.830336666	0.637750722	5.393937746	3.795272728	3.795272728
84	44.87312367	39.12687673	62.81150154	62.81150154	0.75221606	0.576239164	5.470297231	3.759077153	3.759077153
85	44.98015043	40.03084957	65.04630452	65.04630452	0.62217078	0.510176546	5.545954827	3.724010723	3.724010723
86	45.0478751	40.99212249	67.50092398	67.50092398	0.52294456	0.439274133	5.613789406	3.691517144	3.691517144
87	45.1092096	41.8907904	70.25544806	70.25544806	0.41838842	0.362316887	5.682167614	3.658646821	3.658646821
88	45.1307198	42.84692802	73.45196394	73.45196394	0.314015737	0.281659112	5.710118097	3.628461355	3.628461355
89	45.17941097	43.87028803	77.82037419	77.82037419	0.20939698	0.194222419	5.802112249	3.601487934	3.601487934
90	45.1801577	44.8180377	82.43377495	82.43377495	5.99606171	0.104714439	5.895969377	3.580299159	3.580299159
91					5.96045816	3.651382-16	6		6

FIG. 28C

Angles of Incidence and Refraction with Light Source at Infinity

Angle of incidence	Surface D1		Surface D2	
	1	2	3	4
Angle of incidence	Angle of refraction	Angle of incidence	Angle of refraction	Angle of refraction
-68	-41.12866146	48.87013854	#NUM!	#NUM!
-67	-40.77041554	48.22958446	#NUM!	#NUM!
-66	-40.39792637	47.60206563	#NUM!	#NUM!
-65	-40.01272673	46.98726327	#NUM!	#NUM!
-64	-39.61513045	46.38486933	#NUM!	#NUM!
-63	-39.20543259	45.79456741	#NUM!	#NUM!
-62	-38.78393671	45.21604329	#NUM!	#NUM!
-61	-38.35101617	44.64898383	82.14054576	82.14054576
-60	-37.90692247	44.09307733	78.76321707	78.76321707
-59	-37.45198491	43.54801509	76.20499842	76.20499842
-58	-36.98630999	43.01349001	74.6663151	74.6663151
-57	-36.51080101	42.48919899	73.14638904	73.14638904
-56	-36.02515758	41.97484242	71.64701971	71.64701971
-55	-35.5298753	41.4701247	69.9279904	69.9279904
-54	-35.0352454	40.9747546	67.9639697	67.9639697
-53	-34.53115346	40.48844534	66.23984632	66.23984632
-52	-34.01951579	40.01091579	64.59534861	64.59534861
-51	-33.43811127	39.54188873	63.81506493	63.81506493
-50	-32.91820703	39.08109297	62.70210129	62.70210129
-49	-32.37173152	38.62826248	61.67375721	61.67375721
-48	-31.81666329	38.18313671	60.61904947	60.61904947
-47	-31.24539938	37.74546062	59.64238737	59.64238737
-46	-30.68501523	37.31498475	58.70344442	58.70344442
-45	-30.10833477	36.89146523	57.79849963	57.79849963
-44	-29.52336324	36.47466376	56.92488599	56.92488599
-43	-28.93645242	36.06484718	56.07995901	56.07995901
-42	-28.33971056	35.66028944	55.26146882	55.26146882
-41	-27.73773244	35.26226756	54.46742573	54.46742573
-40	-27.12993451	34.87006549	53.69607149	53.69607149
-39	-26.51652792	34.48347208	52.94582506	52.94582506
-38	-25.89771861	34.10228139	52.2126514	52.2126514
-37	-25.273770747	33.72629233	51.5031057	51.5031057
-36	-24.64469043	33.35550957	50.82817757	50.82817757
-35	-24.01083854	32.98914146	50.12941317	50.12941317
-34	-23.37259818	32.62760182	49.4638337	49.4638337
-33	-22.72949111	32.27050889	48.8163384	48.8163384
-32	-22.08231463	31.91768353	48.18069546	48.18069546
-31	-21.43104183	31.56895817	47.55735422	47.55735422
-30	-20.7758415	31.2241585	46.94633852	46.94633852

Corresponding Geometric/Trigonometric Spherical Collector Variables

(Included angle with respect to the horizon)				
X	M	w	L	Y
0	6	180	1.117558E-15	8.41762E-16
0.104714439	5.999086171	179	0.157194083	0.117238501
0.20939698	5.996344962	178	0.310355994	0.222933542
0.314015737	5.991777209	177	0.460325016	0.336590608
0.418338842	5.985384302	176	0.60674444	0.459276738
0.522934456	5.977168189	175	0.750013841	0.537643298
0.62711078	5.967131372	174	0.890316832	0.631218408
0.73121606	5.95527369	173	1.027818185	0.722311078
0.835089606	5.941608412	172	1.162668756	0.809015094
0.938620084	5.926220084	171	1.294992188	0.892200884
1.041889066	5.908846518	170	1.42491642	0.972035996
1.144839172	5.889763101	169	1.552545029	1.048688417
1.247410145	5.868885604	168	1.677973428	1.122325703
1.349708326	5.846220389	167	1.801286937	1.192865232
1.451351374	5.821774358	166	1.922567535	1.260674541
1.552914271	5.795554938	165	2.041865726	1.325772572
1.653824135	5.767570176	164	2.159259304	1.388260233
1.754240228	5.737828396	163	2.274796052	1.448231122
1.854101966	5.706339098	162	2.388523365	1.505772149
1.953408927	5.673111454	161	2.50048302	1.560964092
2.05212086	5.638155725	160	2.610711684	1.613882113
2.150207697	5.601485359	159	2.719241582	1.664596213
2.24763956	5.563103127	158	2.826099913	1.713171656
2.344386771	5.523029121	157	2.931311256	1.759669933
2.440419858	5.481277746	156	3.034893818	1.804146209
2.535709597	5.437846722	155	3.136870949	1.846635444
2.630248881	5.392764278	154	3.237251033	1.887248885
2.723942998	5.346039145	153	3.336047899	1.926972335
2.816829977	5.297685557	152	3.433270797	1.965869318
2.908837721	5.247718243	151	3.528957116	1.997967303
3	5.196132423	150	3.623020286	2.031326914
3.090228449	5.143003804	149	3.715539215	2.065975621
3.179515585	5.088288577	148	3.806510412	2.092947814
3.26783421	5.032023408	147	3.895966137	2.121275964
3.355137421	4.974232455	146	3.983833562	2.147959078
3.441498218	4.914912266	145	4.070166551	2.173121337
3.526711514	4.854101966	144	4.154896383	2.196695212
3.610890139	4.79181306	143	4.238080764	2.218738598
3.693948852	4.728064522	142	4.319649984	2.239276418

(Included angle with respect to the horizon)				
T	S	Delta Q		
-6	#NUM!	#NUM!	#NUM!	#NUM!
-5.88184767	#NUM!	#NUM!	#NUM!	#NUM!
-5.76700942	#NUM!	#NUM!	#NUM!	#NUM!
-5.653186601	#NUM!	#NUM!	#NUM!	#NUM!
-5.546107563	#NUM!	#NUM!	#NUM!	#NUM!
-5.43932489	#NUM!	#NUM!	#NUM!	#NUM!
-5.33212964	#NUM!	#NUM!	#NUM!	#NUM!
-5.22563832	74.83912566	74.83912566	74.83912566	74.83912566
-5.11979777	51.90479777	51.90479777	51.90479777	51.90479777
-5.01325506	41.91235506	41.91235506	41.91235506	41.91235506
-4.90675292	35.9635292	35.9635292	35.9635292	35.9635292
-4.80046881	31.88996488	31.88996488	31.88996488	31.88996488
-4.74640861	28.86604976	28.86604976	28.86604976	28.86604976
-4.633535157	26.49943249	26.49943249	26.49943249	26.49943249
-4.56109817	24.37666661	24.37666661	24.37666661	24.37666661
-4.46978386	22.97009168	22.97009168	22.97009168	22.97009168
-4.379309943	21.59843794	21.59843794	21.59843794	21.59843794
-4.289597818	20.40684094	20.40684094	20.40684094	20.40684094
-4.200566949	19.35688594	19.35688594	19.35688594	19.35688594
-4.113147361	18.42073926	18.42073926	18.42073926	18.42073926
-4.02473612	17.57767346	17.57767346	17.57767346	17.57767346
-3.938886346	16.81189317	16.81189317	16.81189317	16.81189317
-3.849931471	16.11112275	16.11112275	16.11112275	16.11112275
-3.763339768	15.46565889	15.46565889	15.46565889	15.46565889
-3.677126337	14.86771761	14.86771761	14.86771761	14.86771761
-3.591191278	14.31097317	14.31097317	14.31097317	14.31097317
-3.505517393	13.79022555	13.79022555	13.79022555	13.79022555
-3.42007191	13.30113625	13.30113625	13.30113625	13.30113625
-3.334825259	12.84014592	12.84014592	12.84014592	12.84014592
-3.24975094	12.40425508	12.40425508	12.40425508	12.40425508
-3.164825508	11.99032287	11.99032287	11.99032287	11.99032287
-3.080028183	11.57707449	11.57707449	11.57707449	11.57707449
-2.995334078	11.22186615	11.22186615	11.22186615	11.22186615
-2.910376146	10.86222853	10.86222853	10.86222853	10.86222853
-2.825244056	10.51970632	10.51970632	10.51970632	10.51970632
-2.741790929	10.19002479	10.19002479	10.19002479	10.19002479
-2.657406755	9.873062432	9.873062432	9.873062432	9.873062432
-2.573074462	9.567828551	9.567828551	9.567828551	9.567828551
-2.488788104	9.273444704	9.273444704	9.273444704	9.273444704

FIG. 28D

-29	-20.11687648	30.88312152	46.34644094	3.775922346	4.662875769	141	4.399733501	2.258320419	-2.40454335	8.989122239
-28	-19.4543137	30.3450863	45.75721779	3.896725038	4.596266659	140	4.478190132	2.275929274	-2.200373365	8.71418435
-27	-18.76830438	30.21106562	45.17806481	3.956354174	4.528237481	139	4.555038137	2.292088663	-2.236168816	8.447963164
-26	-18.11900413	29.88099587	44.67840933	4.014783638	4.458608953	138	4.630330292	2.306831367	-2.152037586	8.189570492
-25	-17.44656311	29.53343689	44.04792862	4.09159016	4.38812221	137	4.703959895	2.32077318	-2.067944891	7.933034958
-24	-16.7711282	29.2288718	43.49589819	4.167950223	4.316078802	136	4.776056178	2.332145698	-1.983893104	7.696522253
-23	-16.09284309	28.90715691	42.9519469	4.242640687	4.242640687	135	4.846649673	2.34274896	-1.899885701	7.462019338
-22	-15.41184847	28.59815153	42.4163674	4.316098802	4.167950223	134	4.915302066	2.352026023	-1.819271198	7.230314828
-21	-14.72828216	28.27171784	41.88655372	4.388112221	4.09159016	133	4.982475402	2.359960707	-1.732023484	7.006377646
-20	-14.04227922	27.93772078	41.36430421	4.458608953	4.014783638	132	5.048020204	2.366603877	-1.648179761	6.786597225
-19	-13.35397213	27.64602787	40.84851323	4.528237481	3.956354174	131	5.111874521	2.371949083	-1.564044491	6.576956186
-18	-12.66349092	27.33650908	40.33882295	4.596266659	3.856725638	130	5.17408347	2.376020318	-1.48070534	6.36884441
-17	-11.97069327	27.02809623	39.83480127	4.662875769	3.775922346	129	5.234620177	2.37883218	-1.397091128	6.165930056
-16	-11.27651469	26.72348531	39.33630665	4.738046522	3.693968532	128	5.292475817	2.380397468	-1.313713362	5.969122264
-15	-10.58210861	26.42197319	38.84300678	4.79181336	3.610880139	127	5.350641647	2.380773842	-1.230156297	5.776229105
-14	-9.882346561	26.11765344	38.3543785	4.841401266	3.526711514	126	5.405109039	2.379854836	-1.146856678	5.587725743
-13	-9.182868247	25.81713175	37.87039526	4.914912266	3.44148618	125	5.458669515	2.377747403	-1.063482915	5.40343778
-12	-8.481951716	25.51804828	37.39039292	4.974225435	3.355157421	124	5.511914773	2.374507483	-0.980449938	5.223202728
-11	-7.792713468	25.22028633	36.91476563	5.032034408	3.25783421	123	5.562262718	2.370676703	-0.89776718	5.046868097
-10	-7.07626582	24.92373142	36.44656228	5.088268577	3.179515365	122	5.610827462	2.36446704	-0.815048545	4.874250018
-9	-6.371730839	24.62826916	35.97997717	5.140033804	3.090228449	121	5.657679355	2.357721079	-0.732075737	4.705341171
-8	-5.66212848	24.33378715	35.50855358	5.196152423	3	120	5.702785307	2.349842692	-0.650157398	4.539885026
-7	-4.95826161	24.04017384	35.04608813	5.247118243	2.818629377	119	5.746138005	2.340844978	-0.568012743	4.377804808
-6	-4.25281398	23.74731386	34.58636313	5.297683557	2.723042098	118	5.787730838	2.330741512	-0.486087865	4.218982094
-5	-3.544888363	23.4511164	34.12913381	5.34609145	2.63226881	117	5.827557438	2.319545462	-0.40397537	4.063048528
-4	-2.836556162	23.16344384	33.6742391	5.392764278	2.53576957	116	5.865611791	2.307270059	-0.322958822	3.91066336
-3	-2.127793324	22.87220688	33.22140281	5.437846722	2.440419838	115	5.901886262	2.295928526	-0.241781045	3.760950066
-2	-1.418707911	22.58129509	32.77043319	5.520329121	2.344386771	114	5.936381607	2.279534091	-0.160885768	3.614095352
-1	-0.705407641	22.29052236	31.87326697	5.563103127	2.24763956	113	5.969086991	2.264100006	-0.080286765	3.469881699
0	0	22	31.87326697	5.563103127	2.24763956	112	6	2.24763956	0	3.328312088
1	0.709407641	21.70940764	31.42466559	5.601882559	2.150207697	111	6.029116637	2.230166995	0.079538398	3.189239486
2	1.418707911	21.41870791	30.98112062	5.638155725	2.05212086	110	6.056493436	2.211689015	0.159572155	3.052550472
3	2.127793324	21.12779332	30.53643681	5.673111454	1.953408927	109	6.081947272	2.192233804	0.238624877	2.918125623
4	2.836556162	20.83655616	30.09242115	5.706339098	1.854101966	108	6.105655573	2.171802035	0.317700069	2.783838603
5	3.544888363	20.54488836	29.64888252	5.737828336	1.754230228	107	6.127556236	2.150411382	0.396181154	2.655535954
6	4.25281398	20.252814	29.20263146	5.767570176	1.653824135	106	6.14764765	2.138075633	0.474251498	2.527124143
7	4.95826161	19.9582616	28.76247979	5.795534958	1.552914271	105	6.165928715	2.104886996	0.551894425	2.40038603
8	5.66212848	19.66212848	28.31924036	5.821774538	1.451531374	104	6.182398843	2.08024615	0.629093241	2.275158008
9	6.371730839	19.37173084	27.87372677	5.846220389	1.349706326	103	6.197057976	2.05537376	0.705831125	2.15123164
10	7.076268582	19.07626858	27.4317531	5.868885654	1.247470145	102	6.209506387	2.039561919	0.782091774	2.028367031
11	7.779713468	18.77971347	26.9871336	5.889763101	1.144853972	101	6.220945693	2.02712145	0.857838173	1.906281266
12	8.481951716	18.48195172	26.54166248	5.908846518	1.041889066	100	6.230176863	1.975002928	0.933113862	1.784634384
13	9.182868247	18.18286825	26.09421362	5.926130044	0.93860679	99	6.237672222	1.946440123	1.007942333	1.668086643
14	9.882346561	17.88234656	25.6475403	5.941628412	0.83508606	98	6.243224464	1.917085774	1.082027168	1.540877564
15	10.58210861	17.58210861	25.19847501	5.95527691	0.73121606	97	6.247040853	1.886868122	1.155652062	1.417556117
16	11.27651469	17.27651469	24.74782913	5.96713372	0.62717078	96	6.249072334	1.855871619	1.228700839	1.292122277
17	11.97069327	16.97069327	24.2941269	5.977168189	0.522934456	95	6.249240036	1.82409193	1.301157473	1.163273704
18	12.66349092	16.66349092	23.84103419	5.98383842	0.418538842	94	6.24715628	1.791544948	1.373006105	1.029059013
19	13.35397213	16.35397213	23.38450027	5.991777209	0.314015737	93	6.244323886	1.758246799	1.444231062	0.886307091
20	14.04227922	16.04227922	22.92561551	5.99770209	0.20939698	92	6.239316174	1.724213854	1.514816873	0.729137445
21	14.72828216	15.72828216	22.46418219	5.999868171	0.104714499	91	6.232446872	1.689462735	1.584748256	0.5441416
22	15.41184847	15.41184847	22	6	3.67545E-16	90	6.22380512	1.654010328	1.654010328	0.278780415

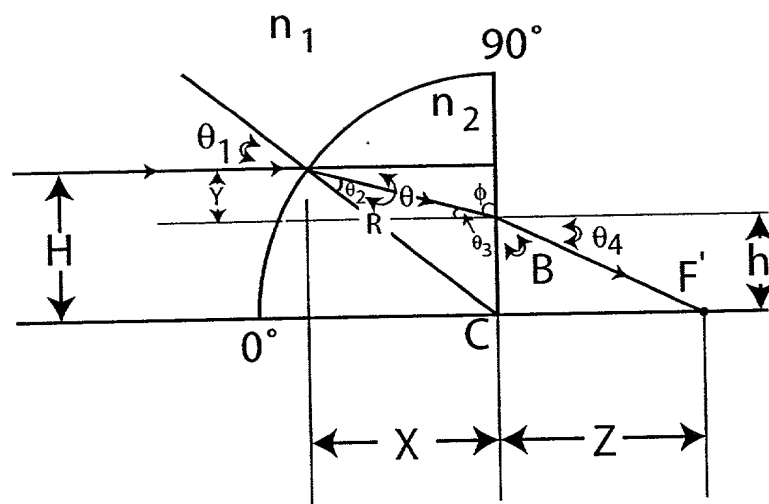


FIG. 29

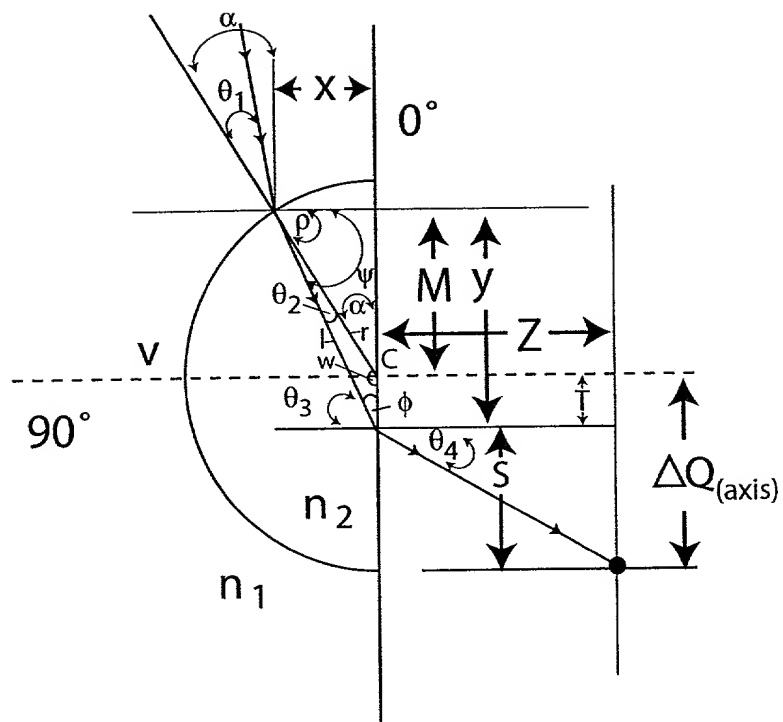


FIG. 30

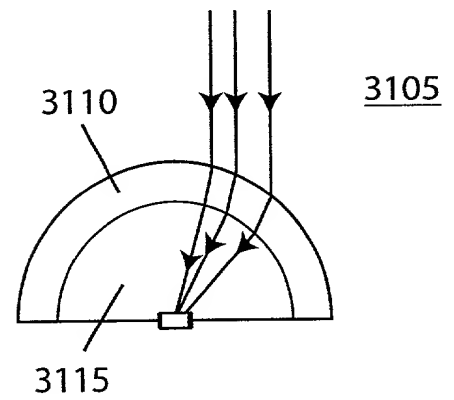
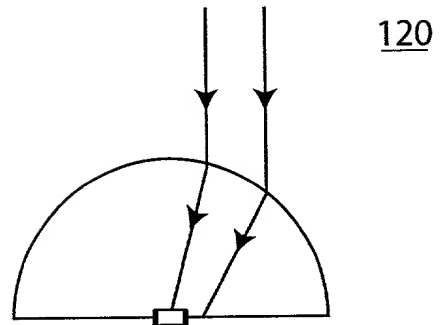
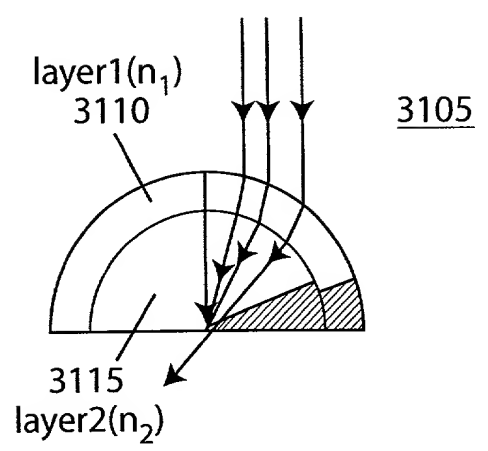
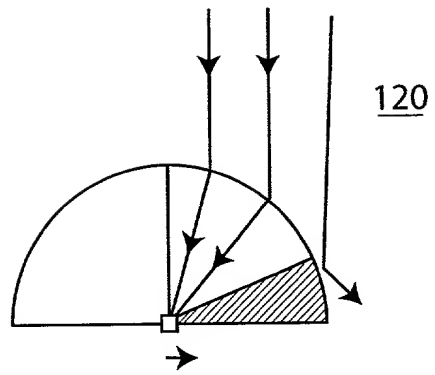


FIG. 31

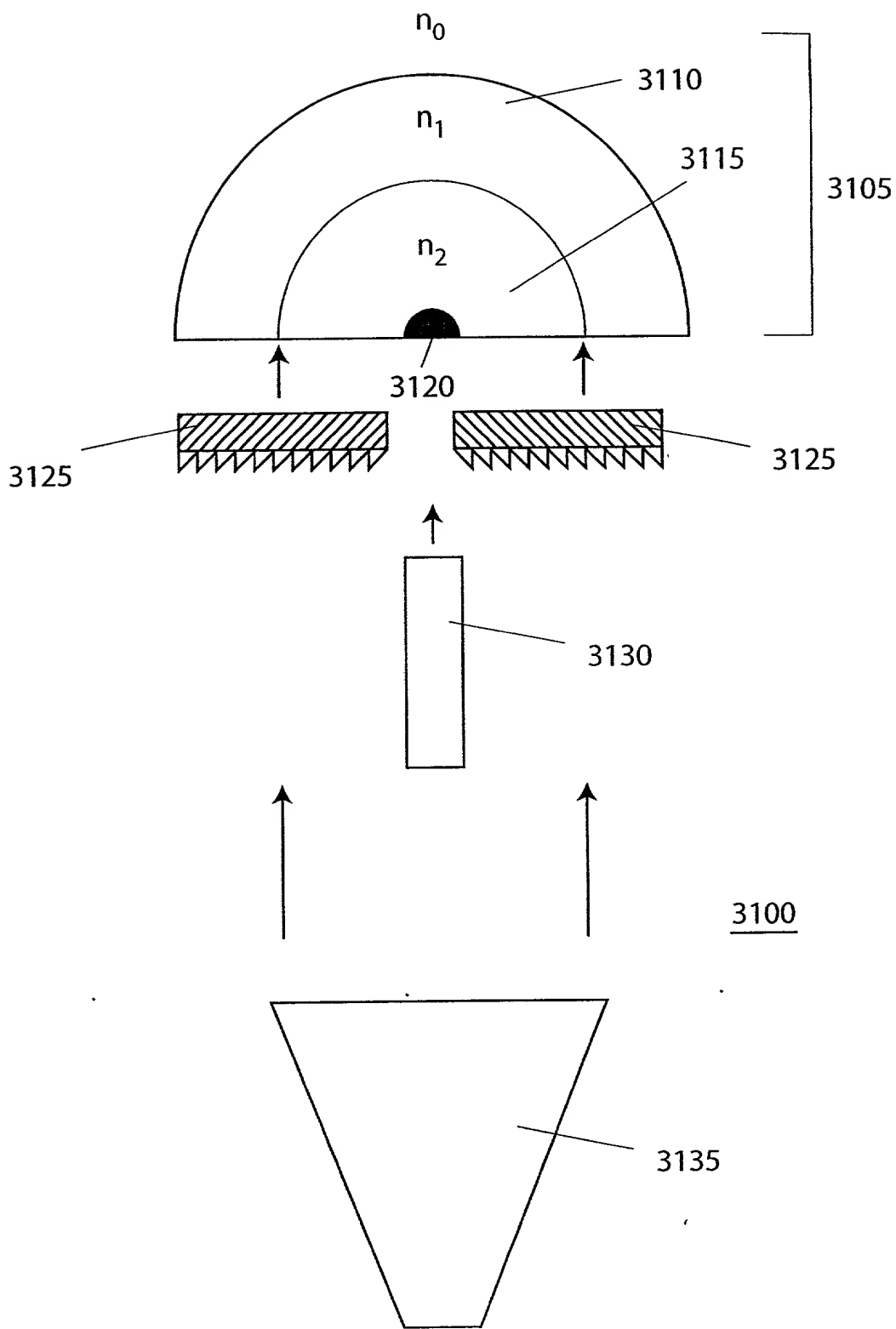


FIG. 32A

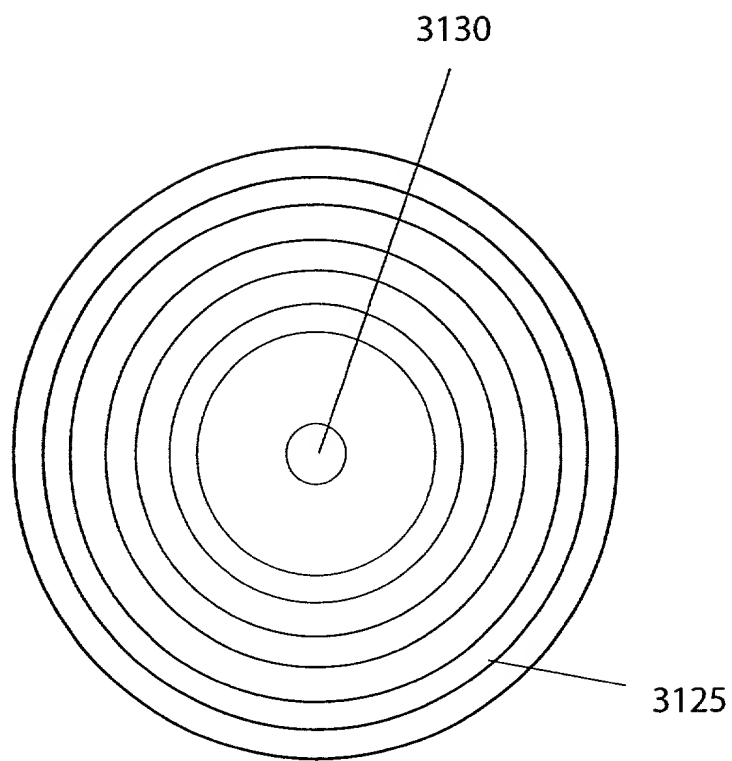


FIG. 32B

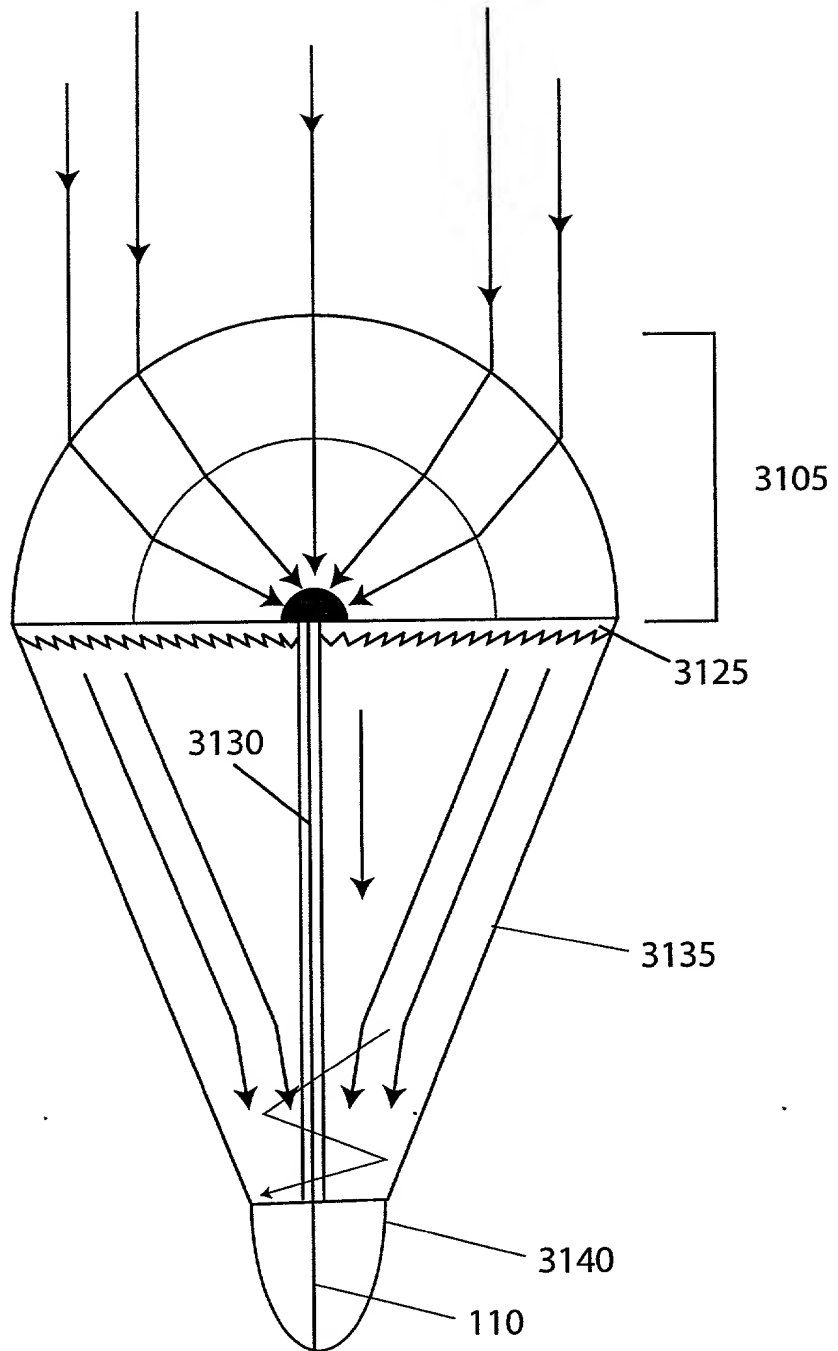


FIG. 32C

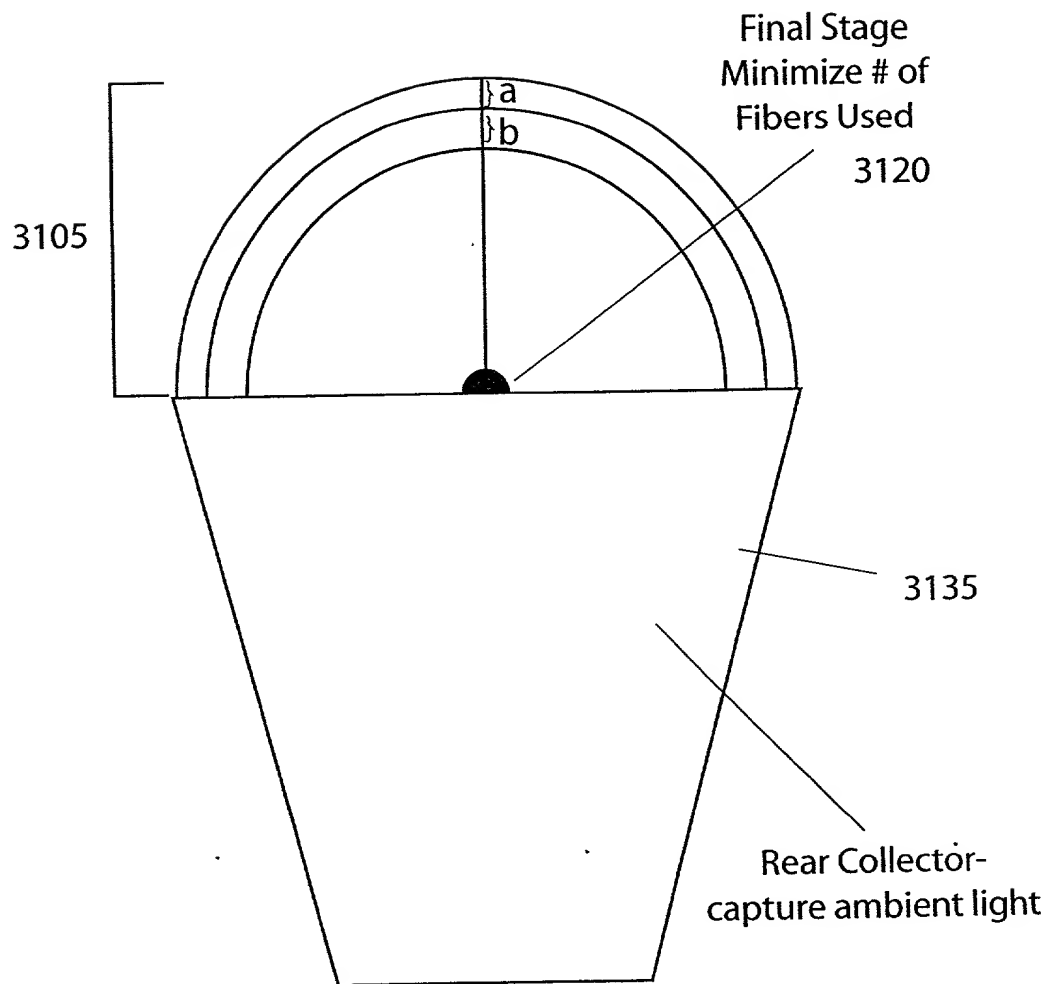


FIG. 32D

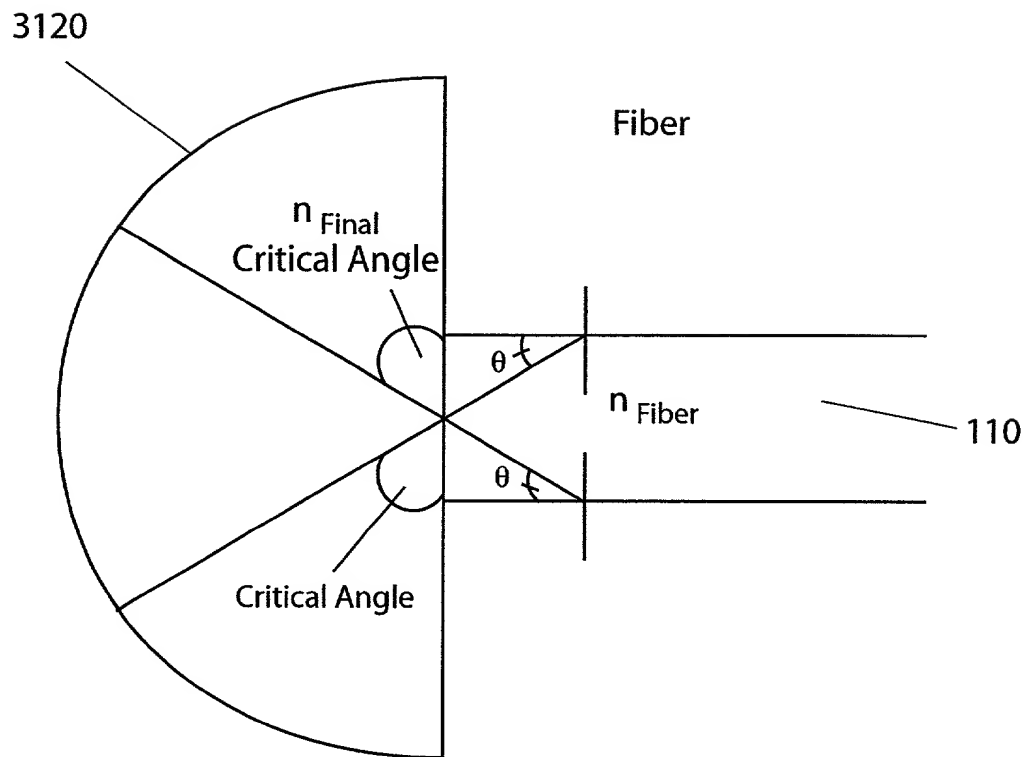


FIG. 33A

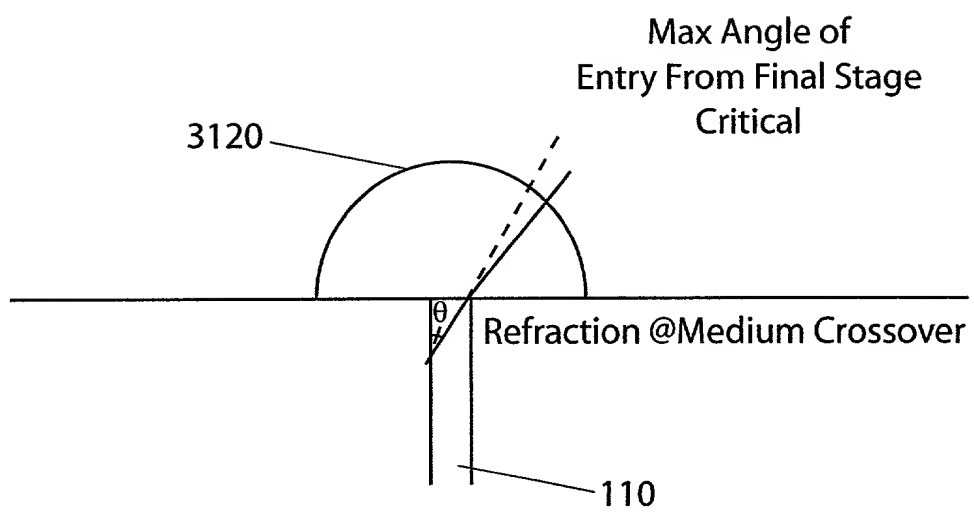
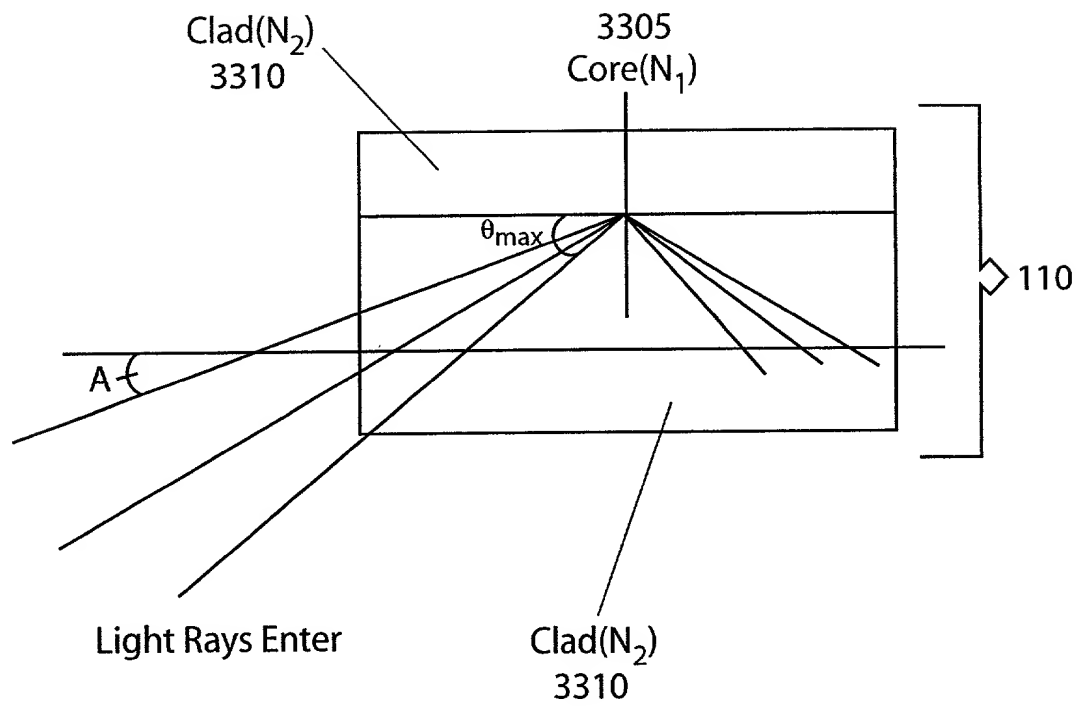


FIG. 33B



$$NA = \sqrt{(N_1)^2 - (N_2)^2}$$

FIG. 33C

3400

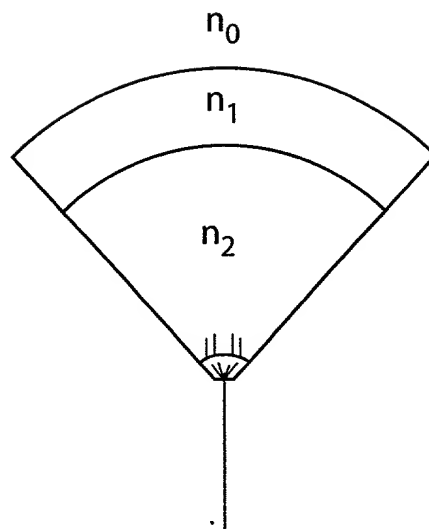


FIG. 34A

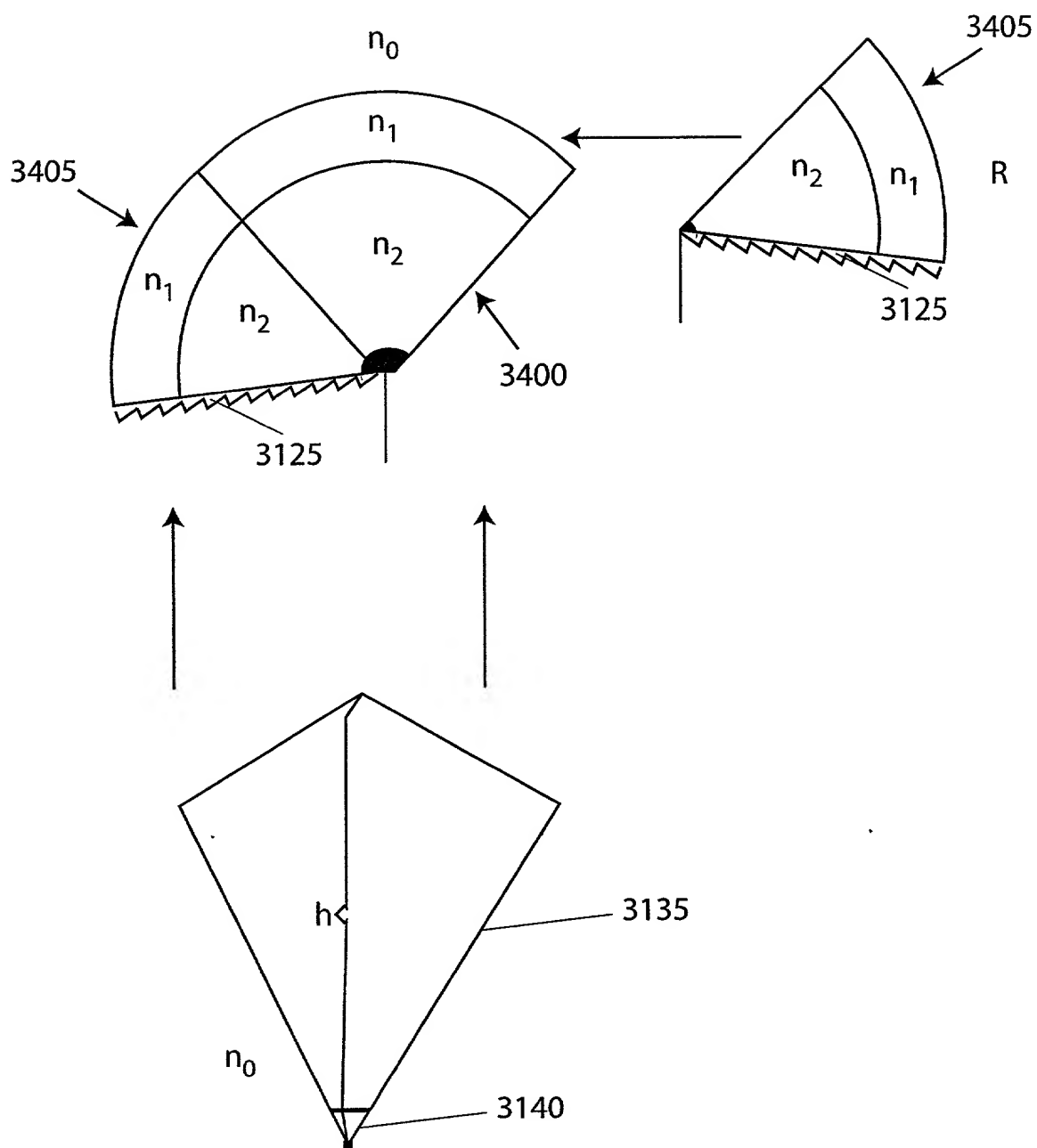


FIG. 34B

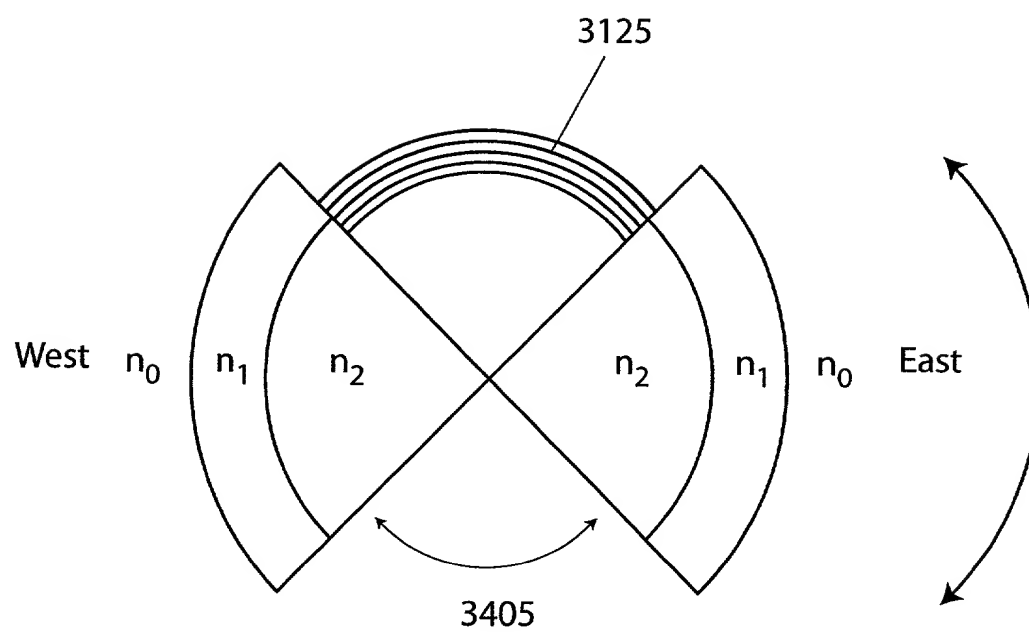


FIG. 34C